# WESTINGHOUSE BEGINS LETTER WRITING TEST

*(Concluded from Page 1, Column 5)*

through the possibility of his obtaining free a new electric refrigerator.

A contract bridge table cover guide will be given to each person upon answering two questions, namely, "How much do you spend for refrigeration each week?" and "How much money could you save by buying foods in larger quantities at quantity prices, by taking advantage of bargain prices, by elimination of needless food spoilage?"

A record is made of the prospects' answers for future reference and then they are given official entry blanks. This entry blank is to be mailed before 12 p. m., Oct. 29, to the contest editor, Westinghouse Electric & Mfg. Co., Mansfield, Ohio.

Everyone is eligible for competition except employes of Westinghouse, subsidiary companies, Westinghouse selling organizations, and members of the advertising agency.

Judges of this national letter contest are: Katherine Fisher, director of Good Housekeeping; A. L. Billingsley, president of Fuller & Smith & Ross; C. E. Allen, commercial vice president, Westinghouse Electric & Mfg. Co.; F. M. Cockrell, publisher, ELECTRIC REFRIGERATION NEWS; R. W. Leavenworth, general advertising manager, Westinghouse Electric & Mfg. Co.

Specially prepared advertisements in national and local newspapers and magazines will announce this contest. Strong national promotion will be given the contest, advertisements being published in the *Literary Digest* issues of Sept. 24, Oct. 8 and Oct. 22, during the time that this magazine will hold its presidential poll.

Not only will national and local newspapers and magazines feature the contest but billboard advertisements, window and showroom displays, window streamers, postcards, gift cards and jumbo folders for canvassers, will be used.

Free gifts for all showroom visitors will be given; films for showing prospects and for sales training will be had; library booklets giving the "year 'round necessity" story, contest entry blanks, telephone canvasses of prospects, radio announcing for local stations, and folders and booklets for handouts, all will be employed to advertise the contest.

Announcement of the winners of the 50 refrigerators will be made just as soon after the closing of the contest as the judges can arrive at their decisions. In case of ties, duplicate awards will be given.

Also if a winning contestant has purchased a Westinghouse refrigerator during the period of the contest, that winner will get full list price credit for a model AL-45 refrigerator.

Refrigeration supervisors who attended the meeting at which these fall plans were outlined were: B. F. Moody, Boston; T. J. Newcomb, W. N. Kennon and C. F. O'Neill, New York district; R. M. Beattie and E. E. Alderman, Chicago district; Richard Owens, St. Louis district; J. M. Johnson, Pittsburgh district; R. I. Eshman, Philadelphia; W. B. Creech, Atlantic district, and George Constance, Washington district.

# FRIGIDAIRE SALES SHOW GAIN AS MONTH OPENS

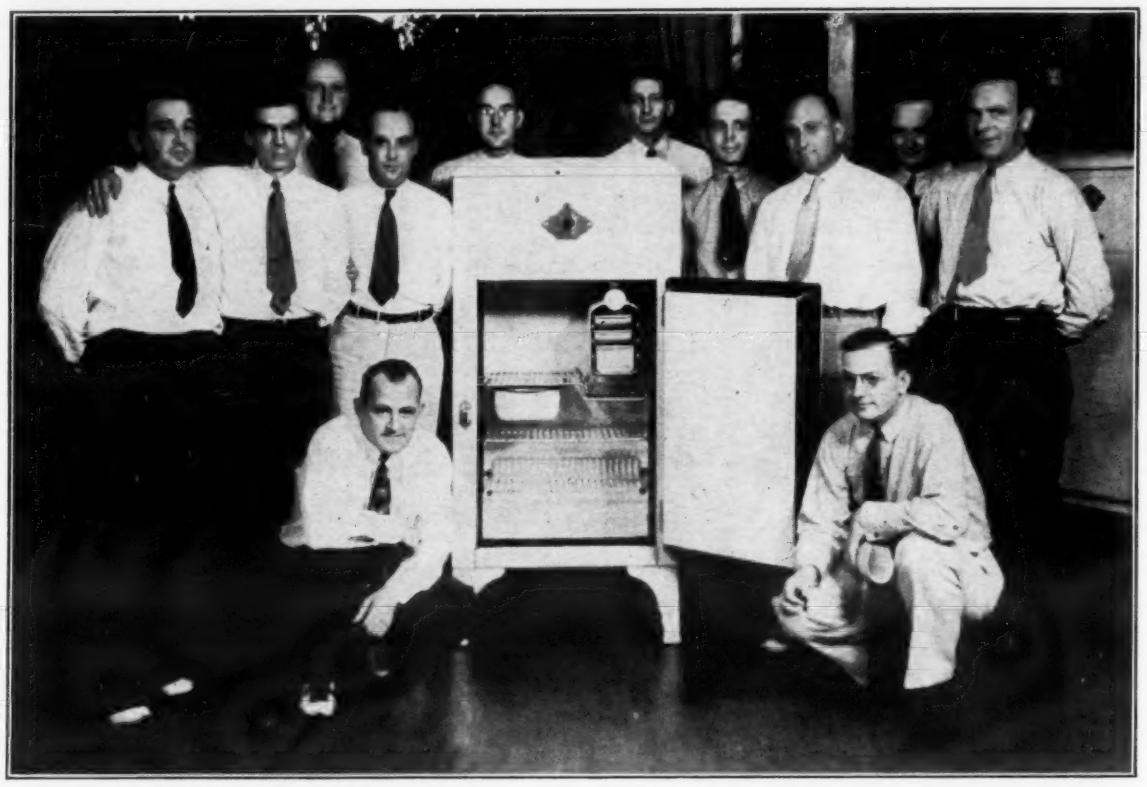
*(Concluded from Page 1, Column 1)*

for the 10-day period over a like period last year.

Business for the first 10 days of September in New England showed a 50 per cent increase over that of the first 10 days of August, according to John Pfeil, manager of Frigidaire Sales Corp. of New England. East Tennessee Electric Co., Knoxville, Tenn., made twice as many sales in September's first 10 days as during the entire month of August, according to its manager.

Officials of the Northwestern Auto Supply Co., Billings, Mont., report that 2,165 persons visited the Frigidaire display at the Midland Empire fair, which opened shortly after announcement of the new Frigidaire prices.

# *Westinghouse Supervisors Meet*



Westinghouse refrigeration supervisors met recently in Mansfield, Ohio, to discuss fall plans.

# G. E. TOPPERS WILL VISIT LAKE PLACID, FACTORIES

*(Concluded from Page 1, Column 1)*

of the afternoon will be spent in making a tour of the rest of the plants in Erie. The main concourse of the Erie works will provide a setting that night for a banquet.

A special train will take the Toppers that night to Schenectady. January 17 and part of the next day will be spent in making a tour of inspection of the Schenectady works including a demonstration of the manufacture and assembly of the Monitor Top in the General Electric research laboratories.

The Toppers will leave the afternoon of Jan. 18 in chartered, steam-heated buses for Lake Placid. Dinner will be served that afternoon in the nationally famous Queensbury Hotel at Glens Falls, N. Y.

At Lake Placid the Forest Club will be specially reserved for the Toppers and there they will make their headquarters for three days.

The entertainment program at Lake Placid includes sledding on a run a mile and a half long, skating, skiing, a baseball game on the ice, snowball battles and other winter sports.

A feature of the stay there will be ski jumping by five nationally known jumpers, who will be brought from Montreal especially for the Toppers.

# AHRENS LEADS CANDIDATES IN G. E. POLITICAL RACE

*(Concluded from Page 1, Column 1)*

Frank Wolf, R. Cooper, Jr. and Thomas J. Sullivan.

During this first short period approximately 400,000 votes were tallied, although no reports were received from 15 distributor organizations.

Cash bonuses are being distributed among all salesmen attaining quota.

Arthur S. Dunning, present chief executive of the nation of Refrigerania, is twenty-second in the list of those aspiring to the presidency.

A. F. Head, vice president, is twenty-fifth; Secretary of State Phil Harrison ranks seventh; W. E. Graham, who succeeded Kenneth Connelly as secretary of commerce, was among those from whom no report was received. Mark Wright and George Belsey, secretaries of health and education respectively also had made no report up to noon Monday.

# HOTPOINT CONTEST STARTS

*(Concluded from Page 1, Column 5)*

tors and each distributor has been asked to appoint someone in his organization to act as sponsor of the campaign in his territory.

Nine district managers are working with the distributors. In addition, nine sponsors have been appointed at the main office in Chicago, and it is their duty to see that the distributors receive the necessary cooperation.

# MAJESTIC ANNOUNCES 8 RADIO RECEIVERS

CHICAGO—Eight new models of Majestic radio receivers have just been presented to Majestic distributors by B. J. Grigsby, president of Grigsby-Grunow Co.

The price of the new models ranges from $44.50 to $149.50, complete with Majestic tubes and Federal tax paid. The prices are slightly higher for the West Coast.

Of the eight models, two are table models. The chassis employed are all superheterodynes, two each of 7, 9, 11 and 12 tubes. Of the two 12-tube radios, one is a broadcast and short wave receiver, providing a range of from 15 to 550 meters.

The other 12-tube is model No. 324, and termed the "Anniversary Model." This receiver combines all the Majestic features in a six-legged console of Gothic design with matched butt walnut doors. Its list price is $149.50.

Among some of the features of these new Majestic radio receivers may be mentioned automatic synchro-silent tuning, full-range tone control, automatic volume control, visual-lite tuning dial, twin super-dynamic speakers, duo-diode detection, full pentode amplification, new resistance-coupled push-pull output, and mercury vapor rectification.

# GIBSON DISTRIBUTORS WIN MANHUNT PRIZES

*(Concluded from Page 1, Column 5)*

ply Co., New York City; Lindeman-Hoffer, St. Louis; Keith-Simmons Co., Nashville, Tenn., and L. V. Whitney, Inc., Chicago.

Gibson MonoUnits Police who "got their men" will collect mystery rewards given by Gibson who has not yet disclosed the nature of the prizes.


# At your service

# . . . more than a Hundred Men!

THERE is no reason for refrigerator sales being lost because the "time" plan was not properly presented—more than a hundred men, thoroughly versed in the art of selling refrigeration on time, are at your service.

Through our many offices located in the principal cities of the United States and Canada, these men are at your command to counsel and advise—to help you make more sales.

Behind these men is the resources of one of the world's largest Finance Companies whose service is as complete in its farthest office as it is at headquarters. Strength, close personal contact, quick credit service, prompt remittances and an efficient collection system make Commercial Credit Service the logical choice of dealers who sense the importance of a strong finance connection to their future progress—use the coupon—get results!

Commercial Credit Company
Baltimore, Md.
Gentlemen:
We would like to talk to one of your men who can show us how to profitably sell on time. We would also like full information regarding your service. This request is made with the understanding that it places us under no obligation.

Name of Concern .....
Address .....
.....
By .....
Title .....

COMMERCIAL CREDIT COMPANY
COMMERCIAL BANKERS
HEADQUARTERS · BALTIMORE
WHEREVER YOU ARE ● WHATEVER YOU MAKE, SELL OR BUY ● INVESTIGATE COMMERCIAL CREDIT SERVICE



THE GREAT SAHARA

is NO DRIER than ANSUL ANHYDROUS ANALYZED SULPHUR DIOXIDE

ANSUL CHEMICAL COMPANY • MARINETTE • WIS

WRITTEN TO BE READ ON ARRIVAL

*Merchandising Section*

IN TWO PARTS
PART ONE

# ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office

The business newspaper of the refrigeration industry

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ISSUED EVERY WEEK

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TEN CENTS PER COPY

## 6 CARS OFFERED BY FRIGIDAIRE IN WRITING CONTEST

### Public To Seek Prizes In Sentence Building Competition

DAYTON—Five automobiles, ten Frigidaires and numerous cash prizes are to be awarded winners of a sentence-building contest, being sponsored by Frigidaire Corp. from Sept. 15 to Oct. 15.

The first prize is a new Cadillac sedan; second prize, a Buick sedan; third, an Oldsmobile sedan; fourth, a Pontiac sedan, and fifth, a Chevrolet sedan.

Sixth, seventh, eighth, ninth and tenth prizes are Frigidaire 5-cu. ft. porcelain models. The next five winners will receive two-cylinder Frigidaires, Model S-5.

There will also be ten prizes of $25 each, and 20 prizes of $10 each.

Entrants of the contest are to write a statement, phrase or sentence consisting of 16 words, each word beginning with each successive letter of the words, "Greater Food Space." This statement is to be based on the advantages of Frigidaire as outlined in a contest booklet, and as explained by the Frigidaire dealer. The statement may consist of one or more sentences.

The statement must be written on an official entry blank and mailed not later than midnight, Oct. 15. Contestants may turn in more than one blank if they desire.

## *'Master Salesman'*

DAYTON—Charles J. Allen, in charge of the educational activity of Frigidaire Corp. sales planning division, is the featured star of Frigidaire's recently inaugurated coast-to-coast radio program of 13 midafternoon broadcasts.

Allen is being billed as "The Master Salesman of the Air." The radio program will originate in the studios of WLW, Cincinnati, and will go out over the NBC blue net of 51 stations.

The broadcasts will deal almost exclusively with the prize contest (to close Oct. 15) in which five cars, including a Cadillac, ten Frigidaires, and a number of cash prizes are to be awarded.

## DR. ALLISON TO CONDUCT LOCAL BUREAU MEETINGS

NEW YORK CITY—A series of electric refrigeration meetings will be held in five central New York cities from Sept. 19 to Sept. 23, through arrangements completed by E. J. Kramer, manager of the Electrical League of Rochester.

Dr. G. W. Allison, field manager of the Electric Refrigeration Bureau, will be present at each meeting and will talk on the general subject, "Why Electric Refrigeration in the Fall and Winter," explaining in detail the various activities which have been sponsored by the bureau, and touching upon the experiences of other cities in promoting them.

The cities in which the meetings will be held and the respective dates are as follows: Rochester, Sept. 19; Ithaca, Sept. 20; Elmira, Sept. 21; Binghamton, Sept. 22, and Syracuse, Sept. 23.

Dr. Allison also will conduct a series of meetings in the Middle West and on the Pacific Coast during the last of

*(Concluded on Page 2, Column 4)*

## SUPPLY CORP. TAKES OVER G. E. DISTRIBUTORSHIP

DES MOINES, Iowa—The Warde B. Stringham Co., distributor of General Electric refrigerators and ranges here, has been liquidated, and all lines of the General Electric Co. in Iowa will be distributed through the General Electric Supply Co. of this city, according to Warde B. Stringham.

Stringham will have charge of distribution of refrigerators and ranges in Iowa under the General Electric Supply Co., P. H. Sawyer, sales promotion and advertising manager of the Stringham Co., has also joined the supply company.

## *Hoot Monners Whoop It Up*

Bill Burns (front and center) and his fightin' Scots attend a birthday banquet for Dick Cooper, president of R. Cooper Jr., Inc., Chicago General Electric refrigerator distributor, launching that organization's fall sales campaign. These boys are from Cooper's south side apartment house division.

## AHRENS HOLDS LEAD IN G. E. 'VOTE' RACE

CLEVELAND, Sept. 19. — (Special Wire to ELECTRIC REFRIGERATION NEWS)—Albert Ahrens, General Electric distributor in Oklahoma City, maintained a wide leadership the second week of the "Monitor Top Election Campaign," and for the time being at least is firmly ensconced in the president's chair.

M. E. Brown, candidate nominated by the A. H. Thompson-Sterling political machine of Louisville, Ky., and who at the end of the first week was secretary of the treasury, moved up to second place and now leads the race for the

*(Concluded on Page 2, Column 5)*

## CONNELLY SELLS FRANCHISE TO G. E. SUPPLY CORP.

BILLINGS, Mont.—F. B. Connelly Co., formerly distributor of General Electric refrigerators and ranges here, has transferred its franchise to the General Electric Supply Corp.

## *Cooper Supporters Attend Birthday Rally*

CHICAGO—"Stand, my lads, and give a cheer, for this will be known as Cooper year," were the words which resounded through the grand ballroom of the Palmer House when 300 salesmen of R. Cooper Jr., Inc., Chicago General Electric refrigerator distributor, gathered here at 7:30 a. m. on Sept. 9 to open officially their fall sales campaign, and boom Dick Cooper for president of Refrigerania.

Date of the breakfast rally fell on Cooper's birthday, and as a gift for the occasion, the salesmen presented him with orders totalling 20 per cent of the organization's sales quota for the entire campaign, which closes Nov. 5. These orders were secured, according to S. Nides, sales promotion manager, in the first three days of the drive, which started Sept. 6.

The meeting was in charge of H. W. Gifford, Cooper vice president in

*(Concluded on Page 2, Column 5)*

## REPUBLIC ANNOUNCES NEW 'ASSEMBLY' PLAN

DETROIT—A plan under which distributors will assemble the units they merchandise, operating under license agreement with a controlling organization which will act as the supplier of parts, has been announced by the Republic Refrigerator Co. of this city.

The main element in the plan, the decentralization of assembly and manufacture, has precedent in the manufacture of Ford and Chevrolet automobiles, in the Coca-Cola bottling plants which are scattered about the country, and in

*(Concluded on Page 2, Column 4)*

## INDIANAPOLIS DISTRIBUTOR NAMED BY CROSLEY

INDIANAPOLIS—Kiefer-Stewart Co. has recently been named distributor in Indiana of Crosley radios and electric refrigerators, according to Powel Crosley, Jr., president of the Crosley Radio Corp.

## *Powel Crosley Drops into the Hoosier Capital*

Powel Crosley, Jr., president of Crosley Radio Corp., arrives in Indianapolis by plane with his party to welcome the Kiefer-Stewart Co., new Crosley radio-refrigerator distributor, into the Crosley family. Standing in front of the amphibian are (left to right) Neil Bauer, Crosley sales manager; C. C. Mathews, Kiefer-Stewart radio and refrigerator manager; O. C. Maurer, Kiefer-Stewart vice president; C. H. Carey, Crosley factory representative; Mr. Crosley; Edward L. Mayer, Kiefer-Stewart vice president; C. L. Erwin, and the pilot.

## BOSTON SESSIONS REFLECT UPWARD TREND OF PRICES

### Distribution Conference Urges Better Sales Training

By George F. Taubeneck

BOSTON, Sept. 20.—Prices are going up. And American business men, no longer hiding in private arks in preparation for a great deluge, are now venturing forth in search of the profits which are available to those who can figure out how to take advantage of the upward creep on which business is now engaged. Keys to these future profits, it was agreed, are study of the consumer and better training of salesmen.

This was the unofficial theme and summarization of most of the remarks made at the Boston Conference on Retail Distribution held at the University club here today and yesterday.

Sponsored by 35 different business and industrial associations (including the National Retail Dry Goods Association, National Chain Store Association, National Association of Retail Druggists, Specialty Stores Association, National Better Business Bureau, American Institute of Food Distribution and Association of National Advertisers) and 18 prominent universities (including Columbia, Chicago, Dartmouth, Pennsylvania, Ohio State, Stanford, Michigan, Northwestern, Oregon, Wisconsin, Nebraska and Texas), this annual national forum for problems of distribution drew more than 200 of the country's leading merchandising executives and authorities.

Among the speakers who precipitated discussions by their presentation of merchandising theories and analyses were P. A. O'Connell, president of the National Retail Dry Goods Association; Walter C. Teagle, president of Standard Oil Co. of New Jersey; Loring A. Schuler, editor, *Ladies Home Journal*; Victor H. Pelz, research director, American Institute of Food Distribution; L. D. H. Weld, director of research, McCann-Erickson, Inc.; Paul T. Cheringy

*(Concluded on Page 12, Column 1)*

## GIBSON OFFICIALS PLAN 1933 SALES CAMPAIGNS

GREENVILLE, Mich. — During the past week Gibson field repreventatives and home office executives have held conferences at the factory here, laying out fall selling plans, and preparing the groundwork for 1933 campaigns.

Among those who attended the councils were: E. H. Macarthy; Herb Young, eastern sales manager; Frank S. Gibson, Jr., vice president in charge of sales; P. W. Peck, southern district manager; Allen W. Church, advertising counsel; C. J. Gibson, president; John Lewis, vice president; F. A. Delano, assistant to vice president in charge of sales; George Farrin, district manager; W. R. Marshall, director of sales promotion and advertising; and G. B. Riddle, sales promotion department.

## REX COLE TO DISTRIBUTE OTHER G. E. APPLIANCES

NEW YORK CITY—As the result of an agreement reached between Rex Cole, Inc., and the merchandising department of the General Electric Co. in Bridgeport, Conn., Rex Cole has assumed the distributorship for four more General Electric appliances—the flat-plate ironer, clothes washer, vacuum cleaner and sewing machine.

William J. Heggie, sales director of the Long Island City retail division, who recently won a Chrysler automobile as leading sales director in a Rex Cole, Inc., campaign, has been appointed to head the new operation, and takes on the tentative title of home laundry equipment specialist.

It is understood that Heggie will recruit an entirely new sales organization to specialize in the sale of these appliances.

Paul H. Hichborn, manager of the retail department, has not appointed a successor to Heggie as yet.

The four appliances will be sold in Greater New York, Westchester County, and Norwalk, Conn.

# ALEXANDER EXPLAINS COIN MACHINE FIELD

BOSTON, Sept. 19.—Addressing the Boston Conference on Retail Distribution here today, Harry W. Alexander cited the growing importance of coin-device merchandising machines in American business, but warned that men should make a careful study of this field's possibilities and difficulties before entering it.

"There will be no overnight successes in this highly specialized field," he said. "Those who are attracted into this business not merely by the glamour of 'vending machine age' slogans, but rather by a careful study and selection of products and service to be sold by this method, are likely to win for themselves a large measure of success."

Pointing out that there is a place for coin-device machines in the country's present merchandising system, Mr. Alexander asserted that "at the moment, business needs a combination of imagination and common sense—imagination to view the present as only one part of a trend in the nation's growth, common sense enough to see that the gains of the past are not lost in emotional reasoning with regard to the future.

"Old ways of marketing and distributing goods to which we pay respect, due to age, must not be worshipped because of tradition. A period of depression forces men to think. We have learned how to scrap machinery and equipment. We are beginning to learn to scrap antiquated viewpoints."

The speaker declared that coin-machine vending is rapidly becoming a real industry, but that business men and bankers are giving it no serious thought. This lack of study, he said, has been responsible for wanton expenditure of millions of dollars in the field without a proper return on the investment.

Coin devices, he said, have a place of their own in distribution, but they must be kept in their place. "Too many organizations have used the vending machine ill-advisedly, attempting to sell an article which in itself foredoomed the particular venture," Mr. Alexander said.

"The vending machine has been used in many fields where experience has shown that it had value only as a novelty, and that over a period of months or years, it did not continue to get the sales volume it originally had. Firms entering this business are often misled by sales made through test machines in the first week or month of installation," he added.

Until recently, the amusement business furnished the greatest outlet for coin machines, but Mr. Alexander believes that their real future lies in the field of merchandising and service of various kinds.

Discussing factors which make for success in the use of vending machines, the speaker mentioned that the devices must be so placed that they have a constant and ready-made market, that they must be accessible for easy service, that transportation costs must be small and that the ratio of gross profit must be greater than is usual in ordinary retailing.

Mr. Alexander estimated that an annual business of $100,000,000 is done through vending machines of various kinds, and mentioned a number of instances where profitable use is made of the devices in this country today.

"More than 1,000,000,000 pennies are dropped in weighing scales each year; one store chain alone takes in 40,000,000 pennies yearly. Automat restaurants feed 500,000 persons a day in New York City, Philadelphia and several other cities. One and one half billion people pass through New York City subway and elevated turnstiles each year, and each leaves a nickel at the stile. In three years, cigarette coin machines have built up a retail business of about $25,000,000," Mr. Alexander pointed out.

"Penny cup dispensers are installed on 80 per cent of all railroad day coaches. There are 680,000 coin-device telephone pay stations in the United States, 16,000,000 nickels being taken monthly from coin stations in the New York City district. Penny machines on New York subways and elevateds bring in $5,500 each week day. Two 10-cent coin-device telescopes atop the Empire State Building, each of which cost $1,500 to buy and install, gross approximately $10,000 per year. Ten thousand handkerchief vending machines in the country gross $300,000 per year."

Mr. Alexander stated that although $3,000,000 have been spent in an attempt to develop a machine to vend five-cent ice cream packages, no satisfactory unit for this purpose has been secured as yet.

At least 300 companies are manufacturing coin-device machines regularly, and many more are making them on special order, in job lots, the speaker stated.

Most vending machines now in use are owned by operators who cover regular routes, restocking and servicing the units as required. Six thousand such operators are in existence at present. A few operator chains have a gross intake above $1,000,000 yearly, according to Mr. Alexander.

"Machines are often leased by merchandise purveyors, or are supplied gratis to operators who agree to sell only the merchandise company's goods. Many machines are owned and operated by national merchandise or service concerns who use the units as channels of distribution. Machines are sometimes sold outright to single retail stores, a policy fought by operators, who claim it hurts the vending business, because the machines often fall into disuse because of some slight mechanical imperfection," said Mr. Alexander.

## *Gibson Executives Plan for 1933*

Gibson factory and field executives meet at the factory to plan 1933 sales activities.

# REPUBLIC ANNOUNCES NEW 'ASSEMBLY' PLAN

*Concluded from Page 1, Column 4)*

the Piggly Wiggly food store operations, according to William Pace of the Republic Refrigerator Co. The plan nearly parallels that of the Coca-Cola Co. in which independently owned bottling works manufacture Coca-Cola under a license agreement with the national organization.

The plan, Mr. Pace states, is designed to allow the distributor to make an assembling profit. The distributor will order the parts through the Republic Refrigerator Co., which will determine the materials to be used and which will do all the buying. Under the terms of the license, the distributor will pay a stipulated amount for the use of the trade name and the purchasing power, promotional efforts and other work done by the Republic Refrigerator Co.

All distributor shipments will go direct to the distributor's warehouse from the point of origin to eliminate doubling of freight and cartage charges.

When the merchandising set-up becomes extensive enough to justify such a move, a national advertising program will be put into effect, and the distributors will be assessed a certain amount on each unit they order for a national advertising fund.

The refrigerators to be merchandised under the new plan of distribution will differ in design from the type now being sold by the Republic Co., and the specifications of the three models in the new line have not been announced, according to Mr. Pace. He stated that the retail price on the three models would be in the popular medium-class price range.

Under the terms of the proposed license agreement, the distributor who is licensed will be given full rights in his territory for three years, with an option for renewal. The license is cancellable for insolvency, or for flagrant violations of the terms of the agreement, the termination of the agreement taking away the right of the distributor to assemble and sell refrigerators under the Republic name.

The distributor must agree to purchase parts only from the Republic Refrigerator Co.; to maintain a retail price within a reasonable range of that suggested by the main office; to use the name plate on every refrigerator sold; and to keep a file of serial numbers for the units sold.

The Republic Refrigerator Co. is operated on a partnership basis by Mr. Pace and Max Rothenberg, both of Detroit. Mr. Pace has acted in the capacity of merchandising manager for the One-Minute Mfg. Co. of Newton, Iowa; assistant to the president of the Frederick Co. (subsidiary of the Maytag Washing Machine Co.); special representative of Williams Oil-O-Matic; and manager of the refrigerator department of the Wurlitzer Music Co. of Detroit.

Mr. Rothenberg has been a jobber for ice boxes and electric refrigerators for more than 10 years. He organized the Republic Refrigerator Co. in 1928 to manufacture and supply special refrigerators on demand.

In addition to his activity in the refrigeration field, Mr. Rothenberg is also president of Fidelity Bankers Investment Co.; and president of Fidelity Home Builders.

## ALLISON WILL CONDUCT BUREAU MEETINGS

*(Concluded from Page 1, Column 1)*

September and the first part of October.

His itinerary is as follows: Denver, Sept. 27; Salt Lake City, Utah, Sept. 29; Spokane, Wash., Sept. 30; Seattle, Oct. 3; Portland, Ore., Oct. 4; San Francisco, Oct. 6 and 7; Fresno, Calif., Oct. 8; Los Angeles, Oct. 10 and 11; San Diego, Calif., Oct. 12; and Albuquerque, N. M., Oct. 14.

The full schedule of meetings for Dr. Allison's return trip by the southern route is now being prepared, with stops in El Paso, Tex., on Oct. 17, and in Dallas, Tex., on Oct. 18.

# AHRENS HOLDS LEAD IN G. E. 'VOTE' RACE

*(Concluded from Page 1, Column 2)*

vice president's office with a total of 56,560 votes. Brown is more than 12,000 votes behind Ahrens, whose total ballots to date amount to 68,640.

A. Wayne Merriam, Albany, N. Y., distributor, whose votes total 50,882, still is leading for the cabinet position of secretary of state. "Hap" Pendergraph of Nashville, Tenn., who at the close of the first week was vice president of Refrigerania, is in fourth place in the number of votes obtained, but cannot lay claim to a cabinet post on account of the number of votes Brown was given last week.

The fourth post in the cabinet, secretary of the treasury—the job that more than one candidate would like to have—still belongs to L. W. (Bill) Driscoll of Charlotte, N. C. Candidate Driscoll has 45,762 votes. His nearest opponent is W. H. Thompson of the Gentsch-Thompson camp in Boston and he is about 14,000 votes behind.

H. H. Courtright, distributor in Fresno, Calif., leads the Pacific Coast district for the cabinet job of secretary of commerce. R. Cooper Jr., distributor in Chicago, is out in front for the secretary of health office.

The Salt Lake City candidate, Frank Edwards, has but a slight lead for the office of secretary of education. E. O Cone of El Paso, Tex., is only about 600 votes behind him.

The eight leaders in the entire contest have averaged since the first day from 150 to 250 per cent of quota. Among these leaders are Phil Harrison, Newark; D. F. Hines, Baltimore, and Charles Gould, Syracuse, N. Y.

Three new candidates had not been heard from at the time final tabulations were made. These are W. E. Graham, C. W. Hartenfels and W. E. Kaiser.

## *Cooper Forces Rally*

*(Concluded from Page 1, Column 3)*

charge of retail sales. Palmer House ballroom was decorated with bunting and posters to resemble a political convention hall.

In his address to the salesmen, Cooper announced that he is a candidate for president of Refrigerania on the independent ticket, with "Prosperity" his party pledge. As he appeared on the stage, the 300 salesmen started a parade which wound through the ballroom for more than 15 minutes.

Cooper suggested that all salesmen work in groups of two or three during the fall campaign, and announced that during the entire period, he will work in the field in company with two other salesmen.

Each of the four Cooper vice presidents, all of whom are candidates for governor of Cooper State (territory covered by R. Cooper Jr., Inc.) addressed the salesmen, giving their platforms and policies.

Gifford, one of the gubernatorial candidates, is running on the "milk ticket," and received a pledge of support from all "farmer" delegates. C. G. Rood, Cooper vice president in charge of apartment house sales, urged his followers to concentrate on replacement business, and used a chart to show how replacement of old refrigeration equipment by General Electrics saved the owner of 83 apartments an estimated $1,000 during the first three years, and $4,000 per year after that time.

L. C. Kohlman, vice president in charge of dealers and utilities, running for governor on a platform of "Success," painted a bright picture for G. E. salesmen's future based on the ever-increasing number of products being handled by G. E. distributors.

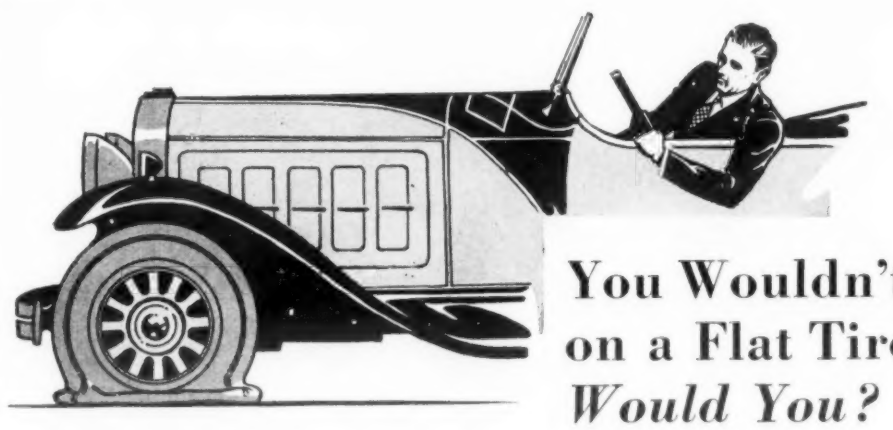
E. W. Parish, vice president in charge of commercial and water cooler sales, spoke into a microphone as he addressed the assembled salesmen. The "mike" was labelled "Station W I E" (Water Internally, Externally, and Eternally).

## PEMBLETON NAMED MEMBER OF BUREAU COMMITTEE

NEW YORK CITY—Frank D. Pembleton, assistant general sales manager of the Public Service Electric & Gas Co. of New Jersey, has become a member of the executive committee of the Electric Refrigeration Bureau, according to Chairman Davidson.

C. E. Allen, vice president of the Westinghouse Electric & Mfg. Co., has also been appointed a member of the executive committee of the bureau to replace C. B. Graves, who recently resigned as representative of Westinghouse.

Other appointments are: H. I. Mitchell, advertising manager of the United Power & Light Co., Abilene, as state director for Kansas, succeeding L. A. Falk, who recently resigned; Lloyd R. Leslie, merchandising manager of Delaware Power & Light Co., Wilmington, as state director for Delaware; and Laurence Jennings, commercial manager of Eastern Shore Public Service Co., Salisbury, as state director for Maryland.

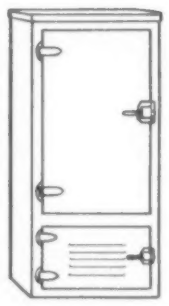


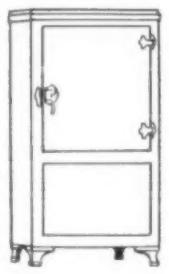
**You Wouldn't Drive on a Flat Tire . . . . Would You?**

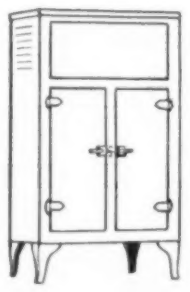
**AN inferior cabinet can destroy the efficiency of your refrigerating unit just as surely as a flat tire can temporarily cripple the finest automobile.**

**But unlike the tire, a refrigerator can't be changed in a few moments. Your customers expect it to go on serving them—year after year.**

**The success of your refrigerator rests squarely on the cabinet. See that it's built right . . . that it's adapted to the unit it's to house. We can build it for you to your exact specifications, of materials that are the best to be had. Or our engineers will gladly extend to you the full facilities of their 37 years experience—to help you determine the cabinet best suited to your needs. Write or wire for complete information.**







TENNESSEE CABINETS

*Refrigerator Division*

TENNESSEE FURNITURE CORPORATION

CHATTANOOGA, TENNESSEE

# HARRY PAGE takes some GOOD ADVICE

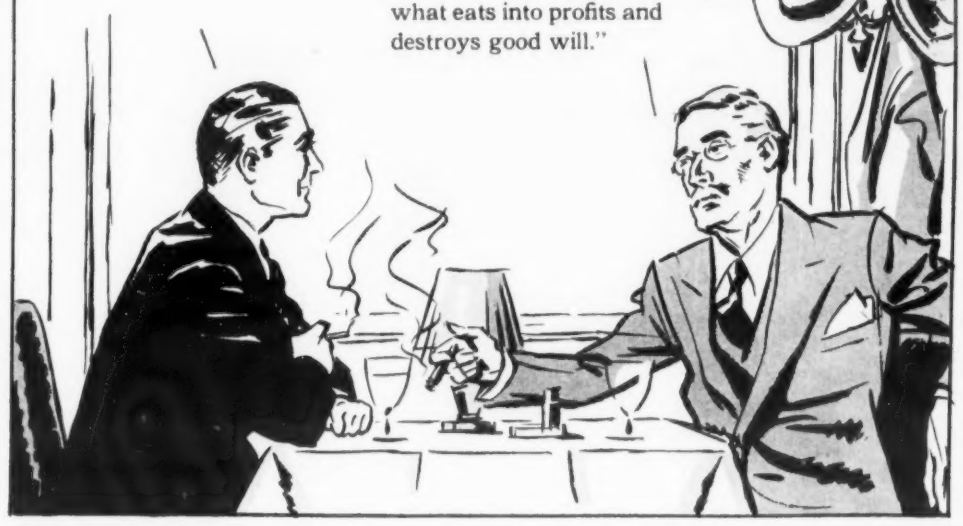
**1** HARRY PAGE, FURNITURE DEALER, LAMENTS THAT PEOPLE WON'T BUY *ANYTHING* THESE DAYS . . . . . .

"But, Harry, they are still buying electric refrigerators. *There's* a business that's keeping up sales all over the country."

**2** HARRY DISCUSSES BUSINESS WITH AN OLDER SUCCESSFUL FRIEND

"What do you think of the electric refrigeration business?"

"It all depends on the line you select. A good line, that gives little service trouble will bring permanent profits and valuable good will—if you really try to sell it. Excessive servicing is what eats into profits and destroys good will."



**3** HARRY "CHECKS-UP" IN HIS OWN HOME . . . . . .

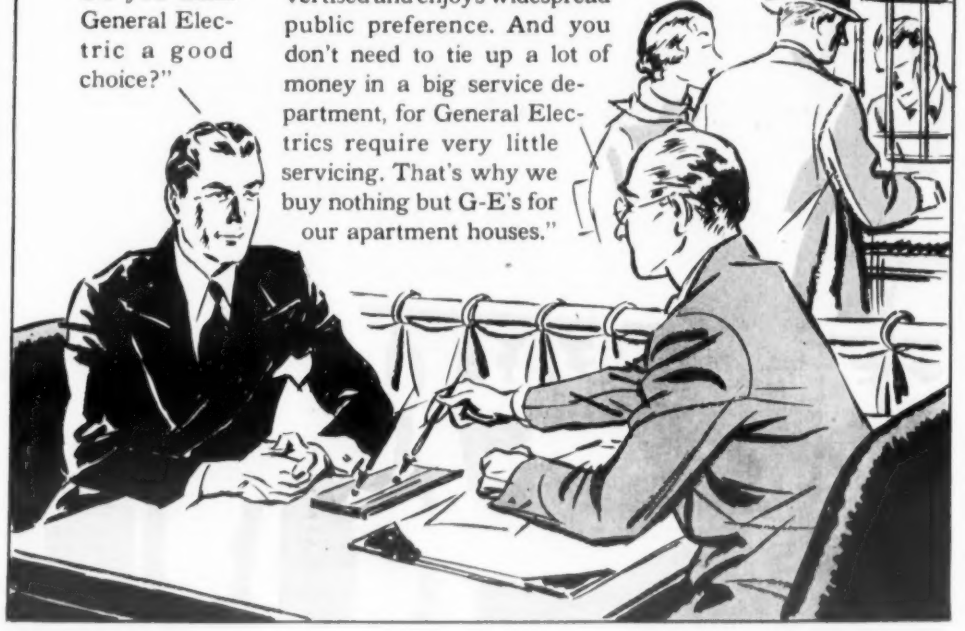
"Jane, when we bought the refrigerator, why did you select a G-E?"

"Because so many of our friends had recommended it. Those who had used G-E for years never had one bit of trouble. You don't even have to oil a G-E."

**4** HE ASKS HIS BANKER WHAT HE THINKS OF A G-E REFRIGERATOR DEALERSHIP

"Do you think General Electric a good choice?"

"Yes indeed! It's made by the world's greatest electrical manufacturing company. It's well advertised and enjoys widespread public preference. And you don't need to tie up a lot of money in a big service department, for General Electrics require very little servicing. That's why we buy nothing but G-E's for our apartment houses."



THE General Electric Monitor Top Refrigerator has already established two records which are unparalleled in the industry. Its record for unfailing, trouble-free, continuous performance is unmatched. And, in five short years it has won a place in one out of every three homes having electric refrigeration.

The Famous Monitor Top mechanism is proof against expensive servicing—safe from neglect or abuse. Every moving part is hermetically sealed-in-steel—requires no attention, not even oiling. Entire responsibility for its performance is assumed by the General Electric Company. The G-E retailer need maintain no large, costly service department—he *keeps* the profits from G-E sales.

Sturdy, all-steel cabinets with porcelain interiors, sliding shelves and exclusive easy cleaning features, add to G-E's saleability. A great army of satisfied users has created a good-will that makes G-E sales easier. Product performance keeps every buyer sold—and protects the dealer's profits. General Electric Company, Electric Refrigeration Department, Section DF92, Hanna Building, 1400 Euclid Avenue, Cleveland, Ohio.

GENERAL ELECTRIC
ALL-STEEL REFRIGERATOR

ONE OUT OF THREE IS A GENERAL ELECTRIC

## 500 BUSINESS LEADERS ATTEND EDISON DINNER

NEW YORK CITY—More than 500 leaders in many branches of endeavor attended a dinner and ceremonies at the Waldorf-Astoria Hotel, Sept. 12, in celebration of "Fifty Years of Edison Service" and the fiftieth anniversary of the starting of the world's first permanent commercial incandescent electric light and power system (Thomas A. Edison's Pearl Street Station and district in lower New York), which the inventor launched at 3 p. m., Sept. 4, 1882.

This celebration was the second of a two-part program. It followed a simple ceremony that was held at 3 p. m., Sept. 4, at the site of the pioneer station.

Frank W. Smith, president of the New York Edison Co., which sponsored the celebration, was toastmaster, and the speakers were Floyd L. Carlisle, chairman of the boards of the New York Edison Co., Consolidated Gas Co., and the Niagara-Hudson Power Corp.; Frederick H. Ecker, president of the Metropolitan Life Insurance Co., and George B. Cortelyou, president of the Consolidated Gas Co. and the National Electric Light Association.

A letter from President Hoover, addressed to Mr. Cortelyou, was read by the toastmaster.

# How To Sell Electric Refrigerators

### As Told By R. J. Magoni, Prize-Winning Norge Salesman

By Elston D. Herron

DETROIT—To become a successful salesman of electric refrigeration in the South, a man must be more than an ordinary salesman—he must be a student, a teacher, a detective, a "smusher" and a Job.

This, at least, is the opinion of Robert J. Magoni, Norge refrigerator salesman for the Max Barnett Furniture Co. of New Orleans, who, on Sept. 7, was awarded a prize here by Major Howard E. Blood, president of Norge Corp., for being runner-up in the Norge Extra Power summer sales contest.

"Before anyone can sell electric refrigerators in the South, he must study its people, their habits, characteristics and ways of living," says Magoni. "No one can sell refrigerators unless he knows something about the people with whom he is dealing. I have to be a student of New Orleans and its inhabitants."

A southern electric refrigerator salesman must be a teacher, Magoni explains, because, before he can sell this comparatively new product, he must educate most of his prospects as to what it is, what it will do, how a "white box with a machine in it" can give better service than ice and mossy wells.

He must be a detective, the crack salesman explains, to find some of the prospects who have money to buy an electric refrigerator, yet are content to use other means of refrigeration without bothering themselves to investigate the newer type.

"Unless a refrigeration salesman in the South is a good 'smusher'," says Magoni, "he had better find a new job, because southern people will not trust anyone—or buy from anyone—who is not willing to sit by the hour with them, talking, drinking coffee, laughing. A man who can do those things well is a 'smusher.'

"One of the prime requisites of a southern salesman is that he have the patience of a Job," Magoni declares. "People in the South won't be hurried. They move when they feel like it, and they buy when they feel like it. To attempt to force a sale is to lose a prospect forever."

#### High Pressure Taboo

High-pressure salesmanship is taboo with Salesman Magoni, an Italian who lived in New England before going to Louisiana 14 years ago. He calls on his prospects regularly for as long as a year, sometimes, and talks his way first into their confidence, and then into their pocketbooks. Southern folk refuse to buy from someone they don't know quite intimately, he says. They enjoy buying from someone whom they trust, someone who will do as they do.

Magoni is employed by the Barnett store primarily as a floor salesman, but spends practically every night calling at prospects' homes, selling Norge refrigerators. He never uses the cold canvass method of obtaining prospects, as the store has a daily traffic of 150 to 200 persons, which furnishes many live prospects.

Just inside the doorway of the store, Magoni has placed several Norge refrigerators, with the rays of powerful spotlights playing down upon them from the ceiling. The units are located between the doorway and the credit department windows, where many customers of the store call weekly to make deposits on their accounts.

#### Stops Prospects in Store

When a customer enters to make a payment on his account, Magoni stops him near one of the units, and begins a demonstration. If possible, he secures the prospect's name and address, and begins a series of calls designed to sell a refrigerator eventually.

If the prospect has a charge account at the store, Magoni invariably checks his account record to determine whether he is a likely prospect, from a financial standpoint.

When a woman enters the store (most of the company's customers are women), and appears to be interested in Norge refrigeration, but refuses to give her name or address, Magoni trails her out of the store and follows her automobile or street car in his own car until he has found the location of her home.

That night, Magoni calls at the prospect's home, and announces that he has come to continue his sales presentation. In most cases, says the salesman, the prospect is so amused at his unexpected appearance that she admits him good-naturedly, and listens willingly to what he has to say.

#### Other Methods Used

Aside from securing prospects from the store's regular customers, Magoni employs two other methods of finding refrigerator buyers. One is what he calls his "ice plant method." He makes regular trips to the local ice plant, parks his car near the customers' platform and waits.

When an ice user drives up to the platform to buy ice, Magoni takes the license number of his automobile, pays 10 cents at police headquarters to learn the man's name and address from the license registration catalog, and calls at the man's home as soon as possible for the first sales contact. The salesman states that he has made some of his best sales to prospects secured in this way.

#### 'Trails' Competitors

Magoni finds other prospects by another form of "trailing." When he sees a competitor's truck passing along the street, bearing a new refrigerator, he follows the truck to its destination, takes the address of the house where the unit is being installed, and then calls there later with his Norge presentation.

Oftentimes, he says, competitors' trucks are merely delivering refrigerators for installation on approval, and where this is true, he is frequently able to sell a Norge, even though another make of unit is temporarily in use at the time.

When this Norgeman has secured the name of a prospect he does not know personally, he uses his knowledge of the southerner's hospitality and curiosity to gain admittance to the prospect's home.

Magoni knocks on the door of his new-found prospect's home, and, when the prospect comes to the door, asks him the location of another address several blocks away. In most instances, Magoni says, the prospect—wishing to be obliging—will go into great detail as to how the address can be found.

Then Magoni begins to manipulate the cutaway rollator which he carries on such calls, and the prospect, he says, is usually quite curious as to what "the contraption" is. When he begins to ask questions of Magoni, the former usually suggests that they sit down for a talk about the rollator, and another one-prospect sales campaign is thus launched.

Magoni never tries to force a prospect into buying a Norge refrigerator, experience having shown him that southern people are skeptical about anyone who uses "high-pressure" methods.

#### Steps in Cultivation

His sales procedure with the average prospect follows a definite plan, consisting of three steps. First, he cultivates the prospect's friendship. Second, he "sells" the prospect on the merits of electric refrigeration. Third, he "sells" the prospect on Norge.

Magoni calls on a prospect every 30 days until the latter reaches what Magoni terms "the shopping stage"—that period when the prospect has become definitely interested in electric refrigeration, and has begun to investigate the features of several makes of units. Then Magoni contacts the prospect almost every day, until the latter buys a Norge or another refrigerator.

#### Reasons for System

While he believes that the cold canvass method of securing prospects is valuable to the average salesman, he feels that his own principal method—securing them from Barnett Co. customers—is better suited to his particular activities, for these reasons:

1. He is able to contact even more persons with this method than through house-to-house canvassing.
2. He is able actually to show the refrigerator.
3. The prospective buyer's record of previous business transactions with the store is often available, through the firm's credit department.
4. Frequently, the prospect is already acquainted with the store, which gives Magoni a good opening for his proposition.

#### Trial Installation

When Magoni is unable to close a sale at the store, or by calling on a prospect, he tries to secure permission to install a Norge in the prospect's home on approval. "This will close sales that would otherwise be impossible to secure," he says.

What, above all else, should any salesman of electric refrigerators do to be successful?

Two things, says Magoni: Always be courteous. And consider anyone who is not an electric refrigerator owner an electric refrigerator prospect.

### *A 'Smusher'*

ROBERT J. MAGONI
New Orleans salesman who placed second in Norge contest.

## LOWER COMMISSIONS CONSTITUTE PROBLEM

SILVER BAY, N. Y.—Reduced earnings for salesmen on straight commission bases have constituted a real problem for sales management, according to Merrill B. Sands, vice president of the Dictaphone Corp., who recently addressed the Conference on Management Problems of Smaller Industries here.

"It is generally realized," says Sands, "that sales management cannot take the attitude that salesmen on a straight commission basis present no compensation problem because they are only paid as they sell.

"Obviously a company incurs a certain overhead expense for every salesman regardless of his compensation basis. There is the expense of hiring, training, furnishing sales tools and equipment. Furthermore, there is the definite expense, intangible though it may be, in salesman turnover which can be described, perhaps, as the cost of inferior or inexperienced selling.

"Companies cannot take the attitude that they have no responsibility for salesmen on straight commission; that they pay the salesmen only for orders brought in; and if the salesman brings in no orders, that is his worry; that a salesman can resign if his earnings do not suit him. Such an attitude is not only demoralizing to the sales force, but is decidedly expensive for the company.

"It is a mark of these times that every effort is being made to keep good salesmen. To meet the problem which has been brought into existence by reduced commission earnings, many companies have adopted drawing accounts.

"They look on these advances as in the nature of an investment in man power which must be charged against the cost of doing business in these times, and which must be incurred as an expense preferable to the costly procedure of dispensing with salesmen.

"There undoubtedly has also been a trend to eliminate salary and commission bases which have become costly with the reduced volume of sales. An effort has been made to shift those men to straight commission bases and replace their salaries with an equivalent drawing account.

"In this way, although the company runs the risk of going into the red on the drawing account, it would incur the same expense if it paid the man a salary, but it does keep commission payments at a definite ratio to sales.

"We know that unless drawing accounts are administered superhumanly, they lead to apparent injustices. A couple of years ago we started applying a rule to overdrafts which I am glad to pass along, with the word that we have found it of benefit.

"We now attach to every authorization for the paying of a drawing account the written stipulation that the maximum overdraft premissible is ten times the amount of the weekly draw."

## G. E. TAX EXPERT DIES

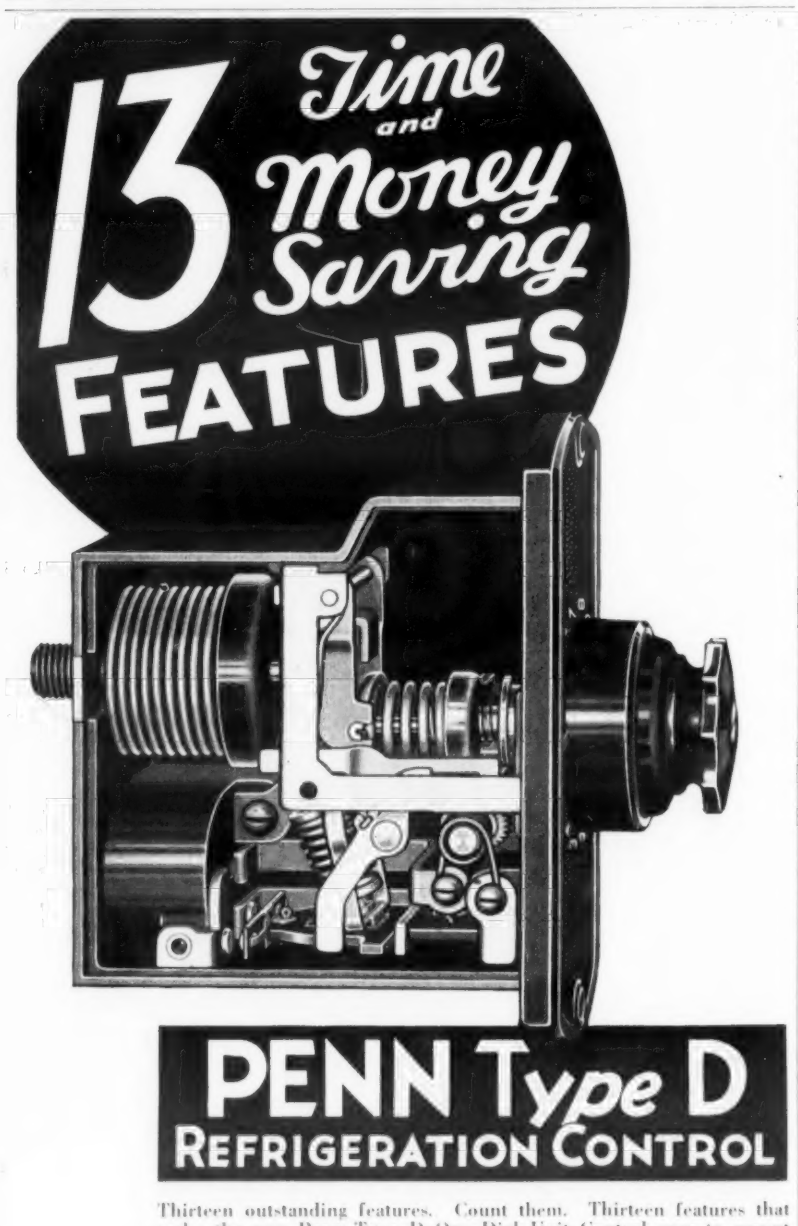
SCHENECTADY, N. Y.—J. Frank Zoller, tax attorney of the General Electric Co. died Sept. 3 as a result of injuries inflicted by a bull of his prize herd of cattle, at his Walhalla Farm.

## FRIGIDAIRE TO EQUIP 100 NEW HAWAIIAN BUILDINGS

HONOLULU, Hawaii—An order for 100 Frigidaires, 100 electric ranges and 100 radios to be installed in that number of new buildings has been received by the von Hamm-Young Co., Frigidaire distributor, here.

Mrs. W. F. Maier of the Maier Realty Exchange, Kaimuki, placed the order. She plans to erect that number of new dwellings this year.

Most of the homes as planned will be of Spanish and Mediterranean type of construction with tile roofs, stucco exterior, plaster interior, hardwood floors, fireplaces, tile baths, showers and sinks, Mrs. Maier states.


PENN Type D
REFRIGERATION CONTROL

Thirteen outstanding features. Count them. Thirteen features that make the new Penn Type D One Dial Unit Control easy to mount in the assembly and easy to service . . . that assure greater simplification of your refrigerator and greater satisfaction to your customer. Switch to Penn. Simplify and Save.

1 One Dial Control, for raising or lowering the temperature, starting, or stopping the unit.
2 One Dial Control for symmetrical appearance with fewer controller handles.
3 Enclosed, fool-proof adjustments.
4 Outside range adjustment without removing the knob or the switch.
5 Outside differential adjustment without removing the knob or switch.
6 No peep holes for overload indication; all taken care of in knob assembly.
7 Trip free when resetting.
8 Trip free when in running position.
9 Greater amount of electric clearance, therefore, less chance for shorts and dielectric losses.
10 Separate latching mechanism for starting and stopping the unit as well as defrosting to eliminate constant use and wear of tooth which engages ratchet wheels in similar controls.
11 Pony electric connections.
12 Front or back mounting instead of the old one way mounting employed by others.
13 Interchangeable on baffle plates with other controls.

*Write now for complete information (Bulletin GA) and new prices*

PENN ELECTRIC SWITCH CO.
DES MOINES, IOWA
Export Department
15 Laight Street, New York

Offices in New York, Boston, Chicago, Detroit, Philadelphia, San Francisco, Los Angeles, Seattle, Milwaukee, Minneapolis, St. Louis, Buffalo, Cincinnati, New Orleans, Kansas City.



McCORD
REFRIGERATION
PRODUCTS

Commercial Evaporators
Domestic Evaporators
Condensers
Easy-Out Ice Trays
Spiral Finned Tubing
Spiral Copper Finned Iron, Steel or Copper Pipe

McCORD
RADIATOR & MFG. CO.
DETROIT, MICH.

# NO OTHER MANUFACTURER IN THE INDUSTRY CAN SAY THIS!

Kelvinator alone, of all the manufacturers in the electric refrigeration industry, gives its dealers the advantages of the most important and most desirable sales feature on an electric refrigerator — *fully automatic operation.*

On the Kelvinator Standard and De Luxe Models, there are no dials to set, nothing to remember or forget, no danger of freezing the contents of the food compartment. Kelvinator alone, has four different, independent temperatures in the refrigerator at the same time, each automatically controlled, without attention or supervision.

With this exclusive feature, Kelvinator dealers have *the advantage* over all competition. And as time goes on, and more and more people learn about Kelvinator's fully automatic operation, this great feature is going to be of greater and greater value to Kelvinator dealers.

This is one reason why so many progressive merchants are coming with Kelvinator. If you would like to know the other reasons, write us and our representative will call. KELVINATOR CORPORATION, *14245 Plymouth Road, Detroit, Mich. Kelvinator of Canada, Ltd., London, Ont. Kelvinator Limited, London, Eng.*

-Kelvinator-

(588)

# MERCHANDISING SECTION ELECTRIC REFRIGERATION NEWS

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## Trend Towards Dual Lines

EVER since General Electric startled the refrigeration world by bringing out a household electric refrigerator with a hermetically sealed refrigerating machine, the argument over the relative merits of conventional and sealed units has raged the length and breadth of the land.

Most of the industry felt that the Monitor Top was rather queer-looking, and a great many sales executives thought it would be next to impossible to create public acceptance for it. Yet almost the entire industry welcomed its advent, because it signaled a new and powerful challenger for Frigidaire.

At that time Frigidaire appeared to have a strangle-hold on the industry, especially in view of the fact that its Wolfe patents seemed to cover almost every principle of construction then in use by household refrigeration manufacturers. The G. E. unit circumvented these patents entirely.

Shortly after the Monitor Top appeared, the industry received two surprises. The first occurred when Judge Tuttle ruled the Wolfe patents invalid, throwing the electric refrigeration industry wide open to all comers. The other was the almost unbelievable sales record made by General Electric with its "funny-looking" refrigerator.

In due course of time Walter Williams, inventor of the Williams Oil-O-Matic oil burner, placed the Williams Ice-O-Matic hermetically sealed unit (also on the top) on the market. Westinghouse came out with a hermetically sealed machine—one which utilized a fan and could be concealed in the top of the cabinet. Majestic did likewise. Servel brought out its Hermetic, which featured a unit at the bottom of the cabinet. Late this spring two radio manufacturers, U. S. and Clago, announced hermetically sealed units.

### *Long-Term Guarantees*

All this time the argument has waxed fast and furiously between the two camps. Still more bitter debates were caused by the inauguration of three-year guarantees and four-year service plans, which came as a result of the factory service plans of the manufacturers of hermetically sealed machines. Even today you will find salesmen of conventional machines who are equipped with a set of arguments damning the sealed jobs, and vice versa.

Now that some million and a half hermetically sealed units are operating satisfactorily in the field, and possibly twice that many of the conventional type also giving good service, neither group can claim that the other type of machine won't work.

In fact, a definite trend can be noted toward manufacturers offering dual lines, so that the customer can have either a sealed or open job, as he prefers.

At the first of the year Majestic announced a conventional unit in a low-priced line of refrigerators which were to be sold by its regular field organization along with the deluxe hermetically sealed line. A few months later Williams Ice-O-Matic, which had long had an open-type line of commercial compressors, brought out a household refrigerator with a conventional unit as a companion for the "capitol" hermetically sealed line.

In August the General Electric Co., instigator and chief promulgator of hermetically sealed refrigerating machines, announced a conventional unit model.

Moreover, it is more than a remote possibility that two or three manufacturers of conventional units might bring out sealed machines next year. Thus 1933 may bring a season of dual line merchandising.

General Electric, Majestic and Williams all use their conventional models as "come-ons" to help sell their hermetically sealed jobs. It seems entirely likely, however, that the trend towards dual line merchandising is significant of executive thinking along the lines of giving the public whatever it seems to want. At any rate, the arguments between the two camps should begin to abate and become less heated within coming months.

## Price or Effort?

WHEN Frigidaire thrust prices drastically downward on its entire line a fortnight ago, it was confidently expected that other manufacturers would go and do likewise. Unexpectedly that hasn't happened.

Westinghouse knocked a few dollars off four of its smallest units, making its lowest-priced model list at $145 f.o.b. (still a considerable distance from Frigidaire's base price of $100). One or two other manufacturers are said to be considering a modest price cut on their smallest models in order to give their dealers a "leader." Another important manufacturing organization may authorize healthy slices in its list prices later this fall if field stocks are not materially reduced before the beginning of the Christmas selling season. But thus far there has been no indication of a grand rush to match Frigidaire's new prices.

Perhaps the best explanation of this situation lies in the fact that a number of sales executives in the industry have figured out another answer. Instead of offering extremely low prices to their dealers and salesmen, to be used as a weapon to combat sales resistance, these executives are increasing discounts and salesmen's commissions, and trying various sorts of bonus schemes (such as contests, with unusually valuable merchandise prizes) to stimulate their sales organizations to greater effort.

### *Price Slash Equivalents*

From the standpoint of actual manufacturer's price per unit, some of these increased discounts, enlarged commissions and disbursements of merchandise prizes are equivalent to big price slashes—even though the base retail price remains somewhere between $150 and $200 per unit. Thus if the scheme works these manufacturers will not be faced with the dilemma of finding satisfactory reasons for upping the price when times are better and there are fewer competitors. Furthermore, maintenance of the retail price enables the salesman to point out that there should be no suspicion of lowered quality in the product he is selling.

This policy of increased discounts and higher commissions instead of reduced prices, however, leaves a path wide open for the chiseler. Everybody seems to be a bargain hunter these days, and the kick of "jewing down" the price on an article is said to be a potent sales force. With wider margins to work on, the temptation to chisel (sell for less than the advertised list price) will likely be stronger than ever.

It is entirely possible that recognition of this situation has been a strong argument in favor of lower prices. Knowing that many of their dealers will sell their machines at lower prices than those listed, manufacturers may feel that they might as well cut their discounts, reduce their prices and get the benefit of national advertising of such prices. Increased store traffic will generally result.

Which of the two theories—reduced prices or increased commissions—is the better suited to present-day conditions cannot be told until all the returns are in at the end of the year. Both, however, are admissions of the fact that something drastic needs to be done if the industry is to get a volume of business in the second half of 1932 which is at all commensurate with the all-time record established during the first six months, and if the heavy stocks now in the field are to be liquidated.

## Letters from Readers

### *E. G. Biechler*

Frigidaire Corp.
Dayton
Sept. 13, 1932.

Editor:

I am only too happy to say that I think a continuation of the kind of attitude expressed in the front-page editorial for the Sept. 7 issue of ELECTRIC REFRIGERATION NEWS will redound to the interest of all of us, and you can be sure of our full cooperation along these or any constructive lines.

I sincerely appreciate the good efforts you are putting forth for the group.

E. G. BIECHLER,
President and general manager.

### *George Mason*

Kelvinator Corp.
Detroit
Sept. 12, 1932.

Editor:

I read the editorials in ELECTRIC REFRIGERATION NEWS for Sept. 7 very carefully last Friday, and think they are a very excellent presentation of the dealer problem.

GEORGE W. MASON,
President.

### *Louis Ruthenburg*

Copeland Products, Inc.
Mount Clemens, Mich.
Sept. 13, 1932.

Editor:

I have heard a number of favorable comments on your front-page editorial in the Sept. 7 issue of ELECTRIC REFRIGERATION NEWS.

I was very well impressed with the constructive nature of this editorial, and was interested in the speculations on department store business contained in the other editorial. Both of these struck me as being pretty much to the point and very much in tune with the times.

LOUIS RUTHENBURG,
President and general manager.

### *Major Blood*

Norge Corp.
Detroit
Sept. 12, 1932.

Editor:

I have read the front-page editorial in your issue of Sept. 7 and wish to compliment you on the good, sound thinking revealed in it.

HOWARD E. BLOOD,
President.

### *H. J. Hunt*

Trupar Mfg. Co.
Dayton
Sept. 12, 1932.

Editor:

Needless to say I was very much pleased to read the front-page editorial, "A Message to Dealers," in the Sept. 7 issue of ELECTRIC REFRIGERATION NEWS.

To me it is the most constructive editorial I have read relating to the industry, and it is just full of good common sense. I am sure it will be quite helpful. My only hope is that you will continue with this sort of policy and good work.

H. J. HUNT,
President.

### *G. M. Johnston*

Universal Cooler Corp.
Detroit
Sept. 14, 1932.

Editor:

Your front-page editorial in the Sept. 7 issue was very interesting, and I believe that such an editorial is constructive to the industry.

G. M. JOHNSTON,
President.

### *C. E. Allen*

Westinghouse Electric & Mfg. Co.
Mansfield, Ohio
Sept. 13, 1932.

Editor:

I have read your editorial from the September issue of ELECTRIC REFRIGERATION NEWS, and I congratulate you on being so straightforward as to come out with so bold a statement, which latter is absolutely true.

There is no doubt in my mind but what disappointment awaits a great many purchasers of these cheap refrigerators. Whether this disappointment comes in a few months or a year or so is more or less beside the question, because when it does come it will mean the purchase of a good refrigerator. In one way, manufacturers of high-grade refrigerators may profit. However, it is demoralizing for the market in the meanwhile.

C. E. ALLEN,
Commercial vice president.

### *Ted Quinn*

General Electric Co.
120 Broadway, New York City
Sept. 12, 1932.

Editor:

I like your message to dealers, but it is six months late. Early this year we said that the one thing which would demoralize prices and adversely affect the industry was dealers' stocks.

There is more than double the quantity of unsold refrigerators in merchandise stocks today. If you were a dealer or a distributor with a stock on hand, short of cash and with the winter approaching, what would you do? That is what the dealers are doing and that is why prices are coming down.

If you will repeat the message to dealers about February of next year it will do more good. Just now they are stuck.

In the General Electric Co. we anticipated the stock catastrophe and price demoralization and stopped our production in April this year, except to use up raw material on hand.

I agree with much of what you say about department store activity in the refrigeration industry.

T. K. QUINN,
Vice president.

### *J. E. Davidson*

Nebraska Power Company
Electric Building, Omaha, Nebr.
Sept. 13, 1932.

Editor:

Your front-page editorial, "A Message to Dealers," is excellent, and I think it presents an important question before the refrigeration dealers, present and prospective, at a time when it is very apropos.

I think all dealers, particularly central station light and power companies, owe it to the public to be trustees of mechanical and electrical machinery and apparatus, about which the majority of people are not informed; and as trustees, to do everything possible to see that the public get electricity consuming devices that are efficient, economical, durable, etc.

The pertinent questions that you bring out at the conclusion of the article are very, very good.

Please accept my compliments.

J. E. DAVIDSON,
President
National chairman,
Electric Refrigeration Bureau.

### *Speed and Insight*

Leonard Refrigerator Co.
Detroit
Sept. 13, 1932.

Editor:

I was interested in reading your front-page editorial in the issue of Sept. 7, and to use a more forceful and eloquent way of describing it, think you said "a mouthful."

Am taking this opportunity to congratulate you on the speed and insight with which you are following on the heels of events in this fast-moving industry.

A. M. TAYLOR,
Merchandising director.

### *Powerful Influence*

Leonard Refrigerator Co.
Detroit
Sept. 14, 1932.

Editor:

I read your editorial on the front page of ELECTRIC REFRIGERATION NEWS a few days ago and had intended to write you but was called out of town.

I want to congratulate you on this splendid article and say that I don't know of any more powerful influence in the whole industry than the front page of your paper. I think the most constructive thing that you can do is to keep on hammering away on this same subject.

It was a splendid article and should do a lot of good. I hope it will be followed by many others of the same kind.

R. I. PETRIE,
Sales manager.

### *Favorable Impression*

Frigidaire Corp.
Dayton, Ohio
Sept. 10, 1932.

Editor:

I like your front-page editorial, "A Message to Dealers." It created a most favorable impression all through the Frigidaire offices, as it seems to hit the nail right on the head.

C. T. MUTCHNER,
Director of public relations.

### *Forceful and Truthful*

Servel Sales, Inc.
Evansville, Ind.
Sept. 13, 1932.

Editor:

To say that we have been interested, or that we approve of the editorial policy which you have recently been pursuing, is to fail entirely in telling you of the moral support, at least, which we are giving you.

Your various recent editorials addressed to different units of the industry have been forceful and truthful, and, in our estimation, if continued will do much toward educating otherwise misguided folks in the fundamental principles of manufacturing and selling the product.

Each of your editorials has been carefully read, widely discussed and heartily cheered within our company. Your grasp of the situation and of the dangers that lie ahead, together with whatever remedies you have offered, seemed to us true and sound.

It might perhaps be expecting too much to hope that any one now committed to what we consider dangerous

*(Concluded on Page 8, Column 1)*

*Revolutionary development brings new standard of values! A *genuine*

# *SUPER·POWERED FRIGIDAIRE*

(TWO CYLINDERS INSTEAD OF ONE)

## WITH 1/4 GREATER FOOD SPACE

*in the same sized cabinet*

TO RETAIL AT

**$112**

*(PLUS FREIGHT)*

DELIVERED, INSTALLED
AND FEDERAL TAX PAID

It's a *real* Frigidaire, with Super-Power, fast freezing, Cold Control, one-piece porcelain interior—plus *one-fourth more food capacity* in the same sized cabinet! And it's priced to reach the thousands who have always wanted real Frigidaire quality but who have heretofore felt it beyond their reach. Aggressive dealers now have a splendid opportunity to capture this vast new market . . . Frigidaire Corporation, Subsidiary of General Motors Corporation, Dayton, Ohio.

**Warning:* *A cheap, underpowered and poorly constructed refrigerator at any price is expensive for you to sell. Customer satisfaction—your greatest asset—is assured with this genuine Frigidaire. Nothing has been "cheapened"—it is the same Super-Powered, two-cylinder Frigidaire made and guaranteed by Frigidaire Corporation, a subsidiary of General Motors.*

*A *GENUINE* **FRIGIDAIRE**

*A GENERAL MOTORS VALUE*

*Frigidaire also makes commercial equipment for Stores, Apartments, Restaurants, Hotels and Institutions . . . Water Coolers . . . Ice Cream Cabinets . . . Milk Cooling Equipment . . . Air Conditioners*

# READERS AGREE HEARTILY WITH FRONT-PAGE EDITORIAL

*(Concluded from Page 6, Column 4)*

policies will see fit to radically change them because of your efforts.

Certainly, however, it can be expected that those concerns who have always maintained high standards of practice in the industry, will find their morals strengthened, and will receive much needed encouragement from your efforts, in the continuance of those principles and policies which in the past have helped to make this a good business to be in.

More power to you and your esteemed magazine!

W. PAUL JONES,
Manager
Advertising and sales promotion.

## *Keep Them At It*

Norge Corp.
331 Madison Ave., New York City
Sept. 13, 1932.

Editor:

The editorial in ELECTRIC REFRIGERATION NEWS of Sept. 7 was timely and well-located in your paper; and it is something that every refrigerator dealer, in my opinion, should have a copy of.

It seems that it is one thing to stimulate dealers' interest and activity, and another thing to keep them at it once we have aroused their interest.

M. G. O'HARRA,
Eastern sales manager.

## *Feature the Slogan*

H. R. Van Deventer, Inc.
New York City
Sept. 12, 1932

Editor:

Why don't you pick out the sentence "If you've never heard of it, don't buy it," from your editorial in the Sept. 7 NEWS and hammer it home in every edition and get the industry as a whole to feature that slogan?

As consulting engineers, we daily see the danger that exists to anyone who buys an electric refrigerator merely because it is an electric refrigerator. You are to be congratulated on your editorial. It is a message that the whole industry should hammer home, not only to the public, but newcomers in the field should keep it in mind.

H. R. VAN DEVENTER,
President.

## *Excellent, Valuable*

General Electric Co.
Electric Refrigeration Department
Cleveland
Sept. 12, 1932.

Editor:

The front-page editorial in the Sept. 7 issue, entitled "A Message to Dealers," was excellent, and it should be extremely valuable to those dealers who expect to be in business a few years from now.

W. J. DAILY,
Manager, sales promotion division.

## *Word for Word*

Suburban Electric Development Co.
Pittsburgh
Sept. 12, 1932.

Editor:

It is indeed a pleasure to realize that exponents of better business and real workers for the betterment of our wonderful industry so clearly recognize the problems that confront us.

I read your recent editorials word for word and over and over again, particularly that on the first page of the Sept. 7 issue, and agree with you in every detail. In fact, these same principles are the things that were uppermost in my mind during the last six months when additional dealer outlets were being arranged for by us.

It is true that many department stores merchandised the less-than-$100 units during the past six months, solely because they were anxious to get into this growing industry and conditions precluded the possibility of their merchandising $200 or $300 units in volume.

I have followed closely the activity of a few of these stores in my territory and it is a fact that the cheap, underpowered refrigerator has proved itself of no avail as far as a return of profit is concerned. In one case in particular, in a western Pennsylvania town, the department store placed some 45 units, and after several months of unsatisfactory performance in customers' homes were forced to take back about 20 of the units.

The problem in a customer's mind perhaps should have been, "Shall I pay a little more and get a super-powered unit that will run only a small part of the time each day, or shall I pay less than $100 and get a unit that will run a large part of the day and cost me a dollar or two more each month?"

The pity of it is that Mr. Average Prospective Buyer did not know enough about what is needed to provide dependable refrigeration and had no measure of value to guide him. Hence, it is an extreme pleasure for me to observe your clear delineation of the precepts that will make our industry go forward ethically and happily. In the end, we are all working for one ideal—more satisfied customers and more sales.

WALTER R. BROWN,
Field supervisor.

## *Doomed—Unless*

Kulair Corp.
Philadelphia
Sept. 12, 1932.

Editor:

I want to take this opportunity to express my views on your editorial in the Sept. 7 issue of ELECTRIC REFRIGERATION NEWS.

Frankly, unless ELECTRIC REFRIGERATION NEWS, as the most important trade paper reaching the largest volume of purchasers of electric refrigeration products, takes this position and continues presenting articles upon this same line of thought, the writer is not hesitant in saying that the electric refrigeration industry is certainly doomed for a terrible mess of wreckage and will carry with it not only those concerns who are operating as pirates in the industry but the legitimate manufacturers, regardless of the quality of their products.

The writer has just returned after a six weeks' trip covering most of the United States, especially devoting attention to domestic sizes of equipment for refrigeration.

On this trip so far I have seen refrigeration equipment that first-class mechanics, first-class refrigeration engineers and average buyers would hesitate to have anything to do with; in fact all of them would call these products the greatest abortion ever offered to the trade.

Naturally, with the decline in prices of raw materials, the trend of times toward reducing costs of equipment and the demand of the public for lower prices, there are a great number of would-be and psuedo investors who do not know the requirements of refrigeration equipment, and all they can see is that one man has something for so much and then another man has what looks like the same thing for so much less, so they proceed to invest blindly in the lower-priced articles simply because they are lower priced, regardless of quality.

On the other hand, if this same purchaser were asked why he did not wear a $5.00 watch, a $4.00 pair of shoes or a $12.50 suit of clothes he would say they do not last; yet he is not willing to purchase refrigeration that would last at least 10 years or more, and should give service at least 24 hours a day, but will purchase an inferior product with the prime idea of a low price. And when a claim comes back, the representative store will be closed, with circus posters in the windows; and claims for defective merchandise cannot be levied because the refrigeration man has quit business.

Manufacturers of first-class refrigerating equipment are suffering, and the only way to prevent the downfall of this industry is as I have mentioned in the fore part of this letter. That is, for ELECTRIC REFRIGERATION NEWS and every representative of every first-class manufacturer simply to pound quality, integrity, house presentation and reputation into the minds of the buyers, and to drive out of the picture absolutely all of the would-be manufacturers who think they can build refrigeration machinery with the employment of a few cheap makeshifts, no engineers and an idea they can get by with those gross misrepresentations, inferior materials, design, construction, workmanship and mechanics.

E. S. LAPE.

## *Increased Prestige*

J. J. Pocock, Inc.
Philadelphia
Sept. 13, 1932.

Editor:

Following my telegram of Sept. 10, I wish to say that if newspapers and other mediums would show the courage you displayed in the front-page editorial for the Sept. 7 NEWS, it would help the legitimate dealer who is trying to conduct his business in a fair and honest manner. It would also protect the poor, unsuspecting public against the racket which has developed in this fine industry and which will eventually cost them a tremendous sum of money.

Apparently "truth in advertising" has been laid on the shelf by some people, at least for the period of the depression; but it is an encouraging sign to see such a straightforward editorial in a paper which is recognized as the Bible of the refrigeration industry. The manufacturers and dealers who may not agree with you will be broke by the time the depression is over anyway, and you will have increased the prestige of your medium among those who are trying to hold the business on a high-grade basis.

I congratulate you again and wish you continued success.

J. J. POCOCK,
President.

## *Right to the Point*

Frigidaire Sales Corp.
219-229 E. North Water St., Chicago

Editor:

I am confident you will see from the attached letter, which is being sent to our entire organization, that we agree most heartily with your editorial in ELECTRIC REFRIGERATION NEWS of September 7.

LOWELL MCCUTCHEON,
General manager, Chicago district.

All Members Frigidaire Selling Organization, Chicago District:

We would like to draw your attention to the editorial which appeared on the front page of the September 7 issue of ELECTRIC REFRIGERATION NEWS. This editorial was written by Mr. George F. Taubeneck, editor, and we recommend that everyone read it.

This is a straightforward, right-to-the-point message, and one that should be read by every man in the Frigidaire organization.

LOWELL MCCUTCHEON,

## *Masterly Manner*

R. Cooper, Jr., Inc.
General Electric Refrigerator
Distributor
221 N. LaSalle St., Chicago
Sept. 12, 1932.

Editor:

Your timely editorial on the front page of ELECTRIC REFRIGERATION NEWS, Sept. 7, received favorable comments from everyone in our organization—it arrived just at a time when there was a meeting of the dealer contact men.

It was unanimously agreed that a message such as yours, if conveyed to every dealer and if at the same time they would heed your warning, there would not be so many changes in dealers as are taking place at the present time.

We wish to thank you for conveying our own thoughts in such a masterly manner. We feel we would be neglecting our dealers if we did not place your message before them at once. If possible we would like to receive about 200 reprints of this editorial.

S. NIDES,
Sales promotion manager.

## *Real Power*

Philip H. Harrison & Co.
General Electric Distributor
41 Central Ave., Newark
Sept. 13, 1932.

Editor:

I have read your editorial in ELECTRIC REFRIGERATION NEWS, and believe that your paper can be a real power in helping to keep this refrigeration industry on a high plane, and not have it broken up by get-rich-quick-schemers or fly-by-nighters.

PHILIP H. HARRISON,
President.

## *Nail on the Head*

Pendergraph-Brown, Inc.
Distributor
General Electric Refrigerator,
Hotpoint Range
Nashville, Tenn.
Sept. 13, 1932.

Editor:

I have read with interest the editorial on the front page of ELECTRIC REFRIGERATION NEWS in your Sept. 7 issue, and wish to congratulate you for the very timely message to dealers.

In my opinion it hits the nail squarely on the head and will act as a warning from an impartial source, and for that reason be more effective than any biased opinion that might be offered.

I look forward always to ELECTRIC REFRIGERATION NEWS, and believe that your paper has done more to promote the right kind of spirit in the electric refrigeration business than any other one agency.

H. A. PENDERGRAPH,

## *Better Standard*

A. S. Dunning, Inc.
G. E. Refrigerator Distributor
Duluth, Minn.
Sept. 12, 1932.

Editor:

I certainly think the idea of your front-page editorial, as it appeared in your issue of Sept. 7, is great and that more editorials of this same kind, prominently displayed, will produce a better standard throughout the electric refrigeration industry generally.

There is certainly every indication at present that the public is turning away from price alone and is giving increasing attention to value and low cost as differentiated from low price; and obviously, that is the sound idea. Editorials such as yours will have a tendency to bring about in the minds of the dealers confidence that this is the right road to travel, and I hope there will be more of them.

A. S. DUNNING.

## *Help Dealers*

Caswell, Inc.
General Electric Distributor
Detroit
Sept. 12, 1932.

Editor:

You bet your life that was a wonderful editorial on the front page of the Sept. 7 NEWS, and I read it to our whole organization last Saturday.

You certainly hit the nail on the head, and it's fine work. I want to compliment you very highly on it. It is just a peach—a great help with our dealers, and also our own men.

S. C. CASWELL,
President.

## *We're With You*

Modern Home Utilities, Inc.
Waterbury, Conn.
Sept. 14, 1932.

Editor:

Your editorial in the Sept. 7 issue of ELECTRIC REFRIGERATION NEWS, hit the ball right on the nose!

We believe this type of editorial is essential at this time, in order to keep the eyes of the electric refrigeration industry to the front, and to keep their feet firmly planted on the ground.

It has been our observation that a number of dealers handling a wide variety of appliances, really do not know what it's all about, and it will be to the discredit of the entire industry if an advantage is taken of these dealers.

We believe with you, that it is to the interest of us all in the promotion of our respective duties to try to maintain a high standard of business ethics and promotion.

We're with you!

We would like to distribute to our dealer structure and several other interested parties this editorial of Sept. 7. If this has been reprinted please forward 50 reprints, and charge our account. If not, may we have 50 extra copies of the Sept. 7 issue of ELECTRIC REFRIGERATION NEWS?

More power to you, and may we have many more editorials of this type.

We appreciate your earnestness and free thinking.

L. L. STACY,
Manager, advertising-sales promotion.

## *Impersonal Voice*

Williams Oil-O-Matic Heating Corp.
Bloomington, Ill.
Sept. 15, 1932.

Editor:

The editorial in your Sept. 7 issue certainly deserves its front-page position. Some impersonal voice should speak the sentiment contained in your editorial. As things now stand, that voice is ELECTRIC REFRIGERATION NEWS. More power to you.

J. M. CULLINAN,
Editor, *Williams News-O-Matic.*

## *Reviewing the Situation*

36 N. Lincoln Ave.
Fond du Lac, Wis.
Sept. 1, 1932.

Editor:

How many times we ask for things we don't want? I speak from a manufacturer's viewpoint first of all, for I have been identified with manufacturers of electric refrigeration for nearly 10 years. And secondly I speak from a distributor-dealer's viewpoint for I have likewise been identified as such in this electric refrigeration industry. Lastly I speak as a consumer, for I know the price of buying an orphan is high.

There are many newcomers in this industry. There is room for them. It's a big industry. But like many other industries the price complex has stepped in and has brought distress upon manufacturer, distributor, dealer and consumer.

What will you have to offer your prospects for 1933? A "bargain" that is doomed to become an orphan, or a product that is built to give service? The "bargain" may be a temptation until you give the matter a little study.

You are essentially in business to make money and establish goodwill. In order to accomplish this it is necessary that the manufacturer remains in business. The lowest possible manufacturer's cost of a complete electric refrigeration unit runs into considerable dollars. A few thousand of these units, manufactured at a loss of 10 or 15 per cent, runs into sufficient money to close up most of the smaller fellows, and put a serious crimp into many of the bigger companies.

But it does more than that. A unit, built down to the last possible cent, is stripped of much to be desired in good electric refrigeration. The comeback is directly on you. True, you have recourse to the manufacturer, because his product is guaranteed. But your goodwill and profits are not guaranteed. And his remaining in business or in the electric refrigeration industry is not guaranteed, especially if you are buying units at "bargain" prices.

This year many dealers told me of two products considerably cheaper than the one I had to offer. We discussed the relative quality of the units, but to no avail. Then I asked if they were selling units or orphans, but they assured me these manufacturers could sell them units at these "bargain" prices and still make a nice profit. One of these manufacturers is now completely out of the picture, and the other is reported about to follow.

If a manufacturer is about to market a new unit, I would have far greater faith in its present value and future possibilities should the price be comparable with the established market. But a product sold to me as a dealer at a price many many dollars below the established market would make me question the likelihood of it's remaining in the picture for any length of time.

One dealer told me he had to have a very low-priced product to meet the demand of his customers. He finally met their price demand, but now since the manufacturer has gone out of business he is finding it extremely difficult to meet the many other demands they are making on these units they have purchased.

Much must be said for some of the many new units that came on the market this year. They proved to be quality products, well merchandised, reasonably and equitably priced, with discounts sufficient to make their offering quite attractive.

To such manufacturers that are planning on entering the refrigeration field I suggest they make a little survey of the history of this industry. It will result in their building a good quality product, competitively priced, and not launched under the misguided belief that it can be listed far below the established market prices, and still leave a profit in it for anyone.

It is remarkable how many standard parts there are alike on a refrigeration unit. The condenser, liquid receiver, motor, evaporator, cold control, and many other like parts are purchased from established houses that specialize in these various products. A great deal of electric refrigeration manufacturing is an assembling procedure. The same condenser that is used on the "A" manufacturing company's unit is also used on the "B" manufacturing company's unit. And so it is with much of the unit.

Then how can a manufacturer put out a standard unit, with recognized quality parts, on a list and discount basis incredulously better than anyone else, and yet remain in business for any length of time. Such a practice hurts the industry in general but directly greatly injures all those who attempt to merchandise the product.

I would venture to say that there is not a remote possibility at this time of cutting $8 or $10 off the manufacturing cost of a small electric refrigeration unit. Then how can such a unit be sold to a dealer 40 or 50 dollars below the standard net prices on established units?

The product I would merchandise next year might be one of the new units. It might be one of the old timers. But it would have to have a sound merchandising plan behind it. It would have to be sold through recognized acceptable channels or outlets, assuring me there would be no special sale or clearing sale that would injure the value of my stock. I would expect the same list price protection that is given an automobile dealer. I would demand a unit that gave real performance and good service, and I would assure myself that the manufacturer was in business to make money and stay in the industry.

If I were a manufacturer I would make note of the fact that many splendid companies have joined the ranks of the electric refrigeration field remaining in it successfully because of their merchandising policies. I would make particular note of the houses that have failed in their efforts to remain in this industry, studying carefully their methods of merchandising. Then I am sure I would not believe in miracles, but would start out to do the job right. I'd give the public what they want in quality and performance. I'd give the dealer an honest opportunity of making his living, and I'd assure myself that I could make such a unit at a price that would meet this demand and yet permit me to stay in business while doing it. All the leaders in the electric refrigeration industry prove it can be done. There is a surprising list of failures who tried to prove they were wrong.

GERALD S. BATAILLE.

## *Business Bible*

Gibson Electric Refrigerator Corp.
Greenville, Mich.
Sept. 13, 1932.

Editor:

I find that all of our distributors and dealers use their ELECTRIC REFRIGERATION NEWS as their business Bible; and I would not do without it on my desk every week as your articles not only keep us informed on what is going on in the industry, but also your editorials offer many things which we have found to be very valuable in formulating our plans for sales.

F. A. DELANO,
Sales manager.

## *Additional Copies*

Sam S. Glauber, Inc.
515 East 79th St., New York City
Sept. 9, 1932.

Editor:

We are just in receipt of your valued medium, ELECTRIC REFRIGERATION NEWS, and in view of our special interest in the editorial, 'A Message to Dealers,' we will ask you to be kind enough to mail us 10 additional copies of this paper, of Sept. 7.

A. S. PENT.

## *Next to His Wife*

Babylon, Long Island, N. Y.
Sept. 7, 1932.

Editor:

Some time this week I am going to move, and as I value ELECTRIC REFRIGERATION NEWS next to my wife I don't want to miss either. Will you change my address so I will get this week's issue at new place?

HARRY O. PUFF.

# On Our Bookshelves

**"HOUSE DESIGN, CONSTRUCTION AND EQUIPMENT"**

**Authors: The committees on design, construction and fundamental equipment, President's Conference on Home Building and Home Ownership. Edited by: John M. Gries and James Ford. Publisher: President's Conference on Home Building and Home Ownership, Washington, D. C. Pages: 325. Date of publication: 1932.**

This book, volume No. 5 of the final reports of the committees of the President's Conference on Home Building and Home Ownership, is particularly of interest because of the pages on air conditioning.

Prof. A. C. Willard of the University of Illinois was chairman of the committee which wrote the chapter on heating, ventilating and air conditioning.

Written from the point of view of the owner of an average home, or from that of the architect or builder interested in such homes, the subject of air conditioning has been treated non-technically. The general reaction of the committee to it was stated thus:

"... It may be briefly stated here that air conditioning and cooling will generally be found too expensive for the entire house, within the price range covered in this report. Humidification may and should be employed, however, and where warm-air furnace heating is used, this as well as the filtering of the air may be accomplished reasonably.

"Reasonable cooling for summer may be applied to one or more rooms: i.e., to a first-floor basement sitting-room or to one of the bedrooms. In this way a health, recreation or rest room may be established where at least one or more of the members of a family may find refuge from the excessive heat in times of sickness, exhaustion or after a hard day's work."

The discussion of air conditioning is divided into three sections, dealing with temperature, humidity and air motion.

Ideal indoor temperatures during the winter months lie between 68 and 72° F., the committee states, while during the summer indoor temperatures should be between 70 and 85° with a relative humidity not exceeding 50 per cent. The greater variance in summer indoor temperatures is necessary, the committee points out, because the human body is not adapted to very great temperature changes in summer. Thus a room at 85° is much more desirable when outdoor temperature is 95°, than is a room at 75°.

"Arguments in favor of humidification (in winter)," states the committee, "are the prevention of damage to household furnishings and the possible reduction in the likelihood of catching cold. Of the two, the former is indisputable, while the second is debatable."

The committee names such simple means of humidification as watering the coal pile or the basement floor, then goes on to the commercial type:

"Humidifiers which are installed in the cellar and form an integral part of the heating system are generally the most satisfactory and best adapted to automatic control. They cost from $200 to $350.

"Cabinet-type humidifiers, piped with water and arranged with automatic humidity control, have been developed to the point where they may be used for humidifying in winter and dehumidifying and cooling in summer. They cost from $50 to $500, depending entirely upon their rated capacity and expected performance.

"Evaporating pans placed upon the radiator generally have about a fourth the required capacity and are ineffective unless kept clean and filled with water."

The committee emphasizes the cooling effect which even a slight movement of the air will cause, stating that an ordinary electric fan will cause an equivalent of a 7° drop in temperature.

The section on cooling and dehumidifying points out to the home owner what types of equipment are now available, and gives initial cost (if such equipment is installed for the whole house when it is first built) from $750 to $1,500, with an operating cost per season of $75 in the cold climates and $175 in the warmer ones.

For the cooling of one room, first cost ranges from $500 to $800, it was stated, and the cost of operation from $20 to $50 per season. Unit coolers and dehumidifiers available for one room cost less than this, it was pointed out.

A complete system which cleans, humidifies and warms the air in winter and cleans, cools and dehumidifies the air in summer was found by the committee to cost from $1,500 to $2,500. Air washers, insulation, small electric-fan units or ventilators are also mentioned as means of keeping the house cooled.

Insulation of a proper sort will cost about $400 for a house in the price range of the report, and will save about $250 in the first cost on the basis of air conditioning for the entire house. Savings in operation will vary from $25 to $75 for an entire house.

The report also describes air filters, to free the air from impurities and dust.

Other chapters in the book concern the design of the dwelling; construction; plumbing and sanitation; electric wiring and lighting, and refrigeration.

The chapter on refrigeration has been reviewed in ELECTRIC REFRIGERATION NEWS previously, as it is a brief of the report submitted by Miss Louise Stanley, Miss Mary E. Pennington, Mrs. Paul E. Howe, George B. Bright and Jesse B. Churchill.

**"HOUSEHOLD MANAGEMENT AND KITCHENS"**

**Authors: Committees on household management and kitchens and other work centers, of the President's Conference on Home Building and Home Ownership. Edited by: John M. Gries and James Ford. Publisher: President's Conference on Home Building and Home Ownership, Washington, D. C. Pages: 228. Date of publication: 1932.**

A foreword by Ray Lyman Wilbur, Secretary of the Interior, to this book, shows its purpose to be the study of home building and equipment from the point of view of the members of the family itself, rather than from the point of view of the architect or builder. The volume is No. IX of the final reports of the committees to the President's Conference on Home Building and Home Ownership.

The first division of the book is devoted to household management. Chapter I considers the problem as a whole, pointing out the difference of modern "scientific" knowledge of household economy, and the old method of handing down such knowledge from mother to daughter.

A chapter is given to a discussion of the house and its equipment, from the standpoint of efficient use of space and design from the point of view of lessening work. Chapter III discusses the management of household operations, including a survey of the time spent in home-making tasks, methods of scheduling such tasks, sharing responsibility for the home with children and other members of the family, the problem of paid household service, substitute services like the commercial laundry, and home production.

Chapter IV discusses purchasing procedures, with a special section on instalment buying. Chapter V discusses budgeting for housing and home ownership, including a section on budget-making and account-keeping, and an analysis of recent urban budgets.

General title of the second part of the book is "kitchens and other work centers."

The first chapter in the second (chapter VII) tells of existing conditions and trends in kitchen planning, then discusses work-center needs in urban and rural dwellings. Chapter VIII tells the housewife the size which her kitchen should be, how to arrange and plan her kitchen, and discusses the various types of kitchens.

Chapter IX gives a discussion on equipment and storage requirements, considering such things as sinks, built-in cabinets and storage space, designs for inexpensive storage equipment, heights of working surfaces, walls and wall finishes, floors, floor finishings and coverings, ventilation, lighting.

The final chapter is given over to a study of the laundry and its equipment and problems, with recommendations for various income levels.

## GENERAL EQUIPMENT CORP. DISCONTINUES AUTO LINE

BOSTON—Discontinuing its automotive division, the General Equipment Corp. here has set itself up as a purely specialty organization on a wholesale basis, covering the New England territory, according to L. T. Maloney of that concern.

The General Equipment Corp. originally supplied replacement parts and accessories to automotive dealers, entering the specialty field via radio in answer to the demands of its automotive dealers.

It next took over the sale of Norge refrigerators, and in the first six months of 1932 its sales of Norge refrigeration were within three per cent of its entire sales for 1931.

Other specialty lines handled by the General Equipment Corp. include L. & H. electric ranges, Voss washing machines, United States radio and television, Goodrich oil burners, Hammond electric clocks, Radiotron tubes and Evinrude outboard motors.

Its automotive inventory in Boston has been sold to the Littlefield-Greene Corp., which will conduct an automotive equipment business at the salesroom formerly occupied by the General Equipmen Corp. automotive division.

## MAXON BURNED BY EXPLOSION OF GASOLINE CAN

DETROIT—Lou R. Maxon, president of Maxon, Inc., a national advertising firm, with headquarters here, is recovering at his summer home near Onaway, Mich., from serious burns suffered when a gasoline can exploded.

Maxon's presence of mind in wrapping a rug around his flaming clothes is believed to have saved his life.

## VIRGINIA BUREAUS PLAN SIX REFRIGERATION SHOWS

NEW YORK CITY—R. H. Giedd, state director of the Electric Refrigeration Bureau for Virginia, has completed preliminary arrangements for six electric refrigeration shows to be held in Virginia during Electric Refrigeration Week.

The shows now definitely set will be held in Alexandria, Charlottesville, Newport News, Clifton Forge, Covington and Staunton.

The exhibits in the last three towns will be under the supervision of the local refrigeration bureau in Clifton Forge, which has just been organized following a visit to that city by Dr. G. W. Allison, field manager of the national bureau.

Thirty-two people attended the meeting which Dr. Allison addressed, on Sept. 8, at Clifton Forge. Three other meetings were held in the state.

## Newsreel Pictures Made Of Williams Plant

BLOOMINGTON, Ill.—Universal Newsreel Service cameramen visited the Williams Oil-O-Matic Heating Corp. factory here the last week in August to film some of the steps in the manufacture of Oil-O-Matics and Ice-O-Matics.

The cameramen have been seeking out those plants in the United States which have made a good showing under present conditions. With all the departments going at top speed, and night shifts being maintained in the majority, the Williams plant was considered a good subject.

Pictures taken will be released in a Universal Newsreel feature entitled "Where Industry's Wheels Are Moving."

This feature will be shown at 4,821 theaters in this country, and at an additional 1,000 theaters in England, France, Germany, Belgium, Russia, the Philippines, Brazil, Chile, China and Japan.

## WHOLESALERS ASSOCIATION WILL MEET IN BUFFALO

NEW YORK CITY—The only general meeting of the National Electrical Wholesalers Association for the present year will be held at the Hotel Statler, Buffalo, Sept. 26 to Sept. 28 inclusive.

Originally scheduled for May, in accordance with the usual tradition, the meeting was postponed from that date.

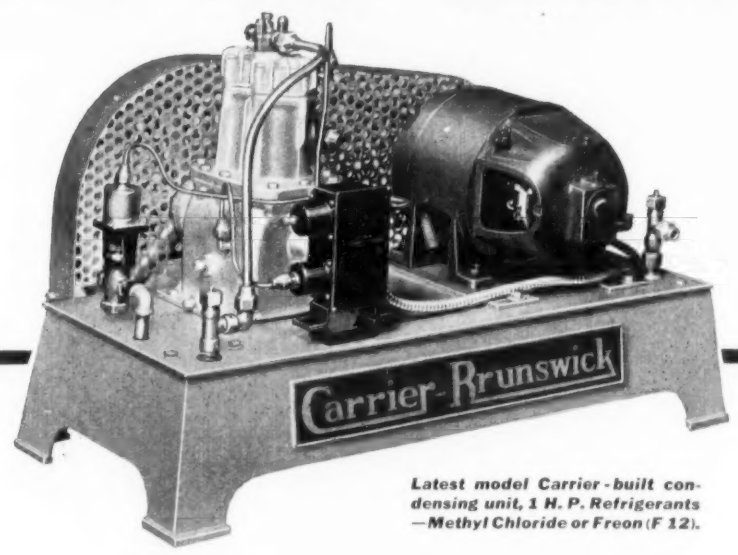
Among the subjects which will be presented during the convention are the consideration of a report from the permanent committee on trade practices; the adoption of plans for making the trade practice rules effective; and the adoption of a declaration of the wholesaler's conception of his position in the electrical industry.

Reports of conditions in the fields of construction materials, apparatus, appliances, lamps, lighting, radio and refrigeration will be given, and the recommendations submitted by committees.


# Carrier

*Invites you into a*

# SALES PARTNERSHIP WITH THIS MACHINE




*Latest model Carrier-built condensing unit, 1 H. P. Refrigerants —Methyl Chloride or Freon (F 12).*

THIS ADVERTISEMENT is primarily of interest to two types of men. The first is now selling a small commercial refrigeration unit with which he may not be entirely satisfied. The second man has never gone after commercial business.

Both of these men—you may be one of them—could make more money by distributing the new Carrier-Brunswick Commercial Refrigerating Unit. With this machine for a business partner, there are many good sales in prospect for you.

In addition to product-cooling applications, you can be prepared to enter the newest and most promising refrigeration market—*air conditioning*. Carrier-Brunswick equipment is made by the leader in the air-conditioning industry as well as in commercial refrigeration.

The new line of Carrier commercial units ranges from ¼ to 3 h. p. capacity. A wide variety of larger machines for special applications up to 1000 tons may also be handled by especially qualified dealers.

Carrier's wealth of engineering experience in refrigeration application is available to you with all Carrier-Brunswick equipment.

Profits on the sale of Carrier units will not be eaten up by constant servicing—a fact illustrated by the successful performance of thousands of these units. A Carrier-Brunswick machine is in every sense a reliable partner.

We invite qualified distributors and dealers to send at once for full information about this new line of Carrier-Brunswick commercial refrigerating units. Details of an attractive Carrier sales proposition are now ready.

## Carrier Corporation

853 FRELINGHUYSEN AVE. NEWARK, NEW JERSEY

**MAIL THIS COUPON FOR COMPLETE INFORMATION—TODAY!**

CARRIER CORPORATION, 853 Frelinghuysen Ave., Newark, N. J.

GENTLEMEN: I'm interested. Please send me by mail details about the sales proposition for Carrier-Brunswick Commercial Refrigerating Machines.

NAME_____

ADDRESS_____

LITTLE STORIES OF INTERESTING PEOPLE IN THE REFRIGERATION INDUSTRY

# THE EXPANSION VALVE

LITTLE STORIES OF INTERESTING IDEAS IN THE REFRIGERATION INDUSTRY

*By* **George F. Taubeneck**

## *Bill Grunow Back*

Dramatic. Dynamic. Courageous. Pugnacious. Independent. Spectacular. These are a few of the words which fit Bill Grunow, whose name comprises one half of the Grigsby-Grunow Co. (Majestic), and who was a powerful factor in that concern's sensational rise in the radio industry, but who is now working entirely on his own initiative.

Bill is about to begin manufacturing and selling an electric refrigerator. And that's news, because anything this Grunow man does is news. One doesn't know what to expect, but one does expect something extraordinary.

In March, 1931, your correspondent learned that Grunow and some of his former associates at Majestic were planning to make and sell Grunow radios and electric refrigerators. We scooped the world with that news (nearest rival: *Chicago Herald and Examiner*, one week later).

But Bill had all his money tied up in a trust fund, and couldn't get at it; so the project was dropped.

Now, we understand, he has succeeded in breaking that trust fund, and has five million dollars at his disposal. Straight goods—five million dollars! With which he can go to work. No stock for sale.

Inasmuch as cabinets may be had for the proverbial song these days, he probably won't undertake to make the boxes for his new electric refrigerators. However, we understand that he is seriously considering the use of distinctively styled cabinets—boxes which can easily be identified as "something new."

Grunow refrigerating machines will probably be manufactured in Chicago, in a plant which is now being made ready for the purpose.

* * *

## *Safe Refrigerant*

The compressor is said to be an unusual type of rotary. It will use carrene as a refrigerant—the first time this new Carrier refrigerant has been employed in a household electric refrigerator.

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**We can't vouch for this, but Bill is just the sort of fellow who is likely to capitalize upon the safety qualities of that refrigerant.**

**Hitherto the industry has shush-shushed that matter of refrigerants. Even when Frigidaire produced F-12, for which they claim unusual safety, they kept it a dark secret and refused to capitalize upon it—for fear of the effect it might have upon users of sulphur dioxide.**

**But Grunow is not a man to be led by precedent, or to be frightened by the frantic gestures of other executives in the industry. Before he gets through, there may be some fireworks.**

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Duane Wanamaker, who was formerly vice president and director of advertising for the Grigsby-Grunow Co., is now in charge of sales and advertising for the Grunow Corp. M. W. Kenney, smart young engineer who was also formerly identified with Majestic, is directing production activities.

Headquarters have been established in the Bell Bldg., at 307 N. Michigan Ave., Chicago.

At present Mr. Grunow is sessioning with a number of men who are planning to distribute the Grunow refrigerator. They are all up at Bill's camp in Canada, where they will think and play for 10 days.

It is expected that the Grunow refrigerator will make its public bow before Christmas. According to present plans, it will not be especially low-priced.

An announcement of the forthcoming Grunow refrigerator appeared in the Aug. 24 issue of the NEWS; but we thought you might be interested in this advance "inside dope."

* * *

## *Majestic's Elaborate Master Dealer Plan*

Several weeks ago Sales Manager John Ditzell of Majestic wrote the Valve that there was something new being hatched under the sun over at the Majestic idea laboratories on Dickens Ave., and we should drop in to find out what it was all about.

Like a good many other places we'd like to go, this was just one too many. A short time ago, however, John sent the whole kaboodle over to us. And what a kaboodle it was!

Within a whopping big leatherlike-paper envelope were eight pretentious manuals. Each of these manuals tell how different divisions of the Majestic sales organization (dealers, distributors, field representatives, salesmen) may use the Master Dealer Plan with profit.

What is the Master Dealer Plan? It provides for the appointment of 1,000 particularly successful Majestic dealers as "master dealers," who are to receive special aid and attention in building sales. These dealers are to be appointed by Majestic distributors, with the approval of Grigsby-Grunow chief executives.

Why is Majestic concentrating its sales promotional efforts on a selected group of dealers? Because Grigsby-Grunow sales heads believe such a scheme will increase profits for distributors, dealers and salesmen by maintaining a more consistent (as well as larger) sales volume throughout the year—thus effecting production economies by synchronizing the Majestic sales curve with its production curve.

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**Idealistic? Sure. But you should see how practical it is! Every one of those manuals is a gem.**

**Crammed full of facts, neatly colored with inspiration, embroidered with adroit suggestions, these manuals are easily the most comprehensive collections of sales information on the industry which have yet emanated from any manufacturer.**

**They must have cost a small fortune in time, effort and printing expenditures.**

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* * *

## *Scanning the Planning*

It will take a leisurely, thorough-going reader at least a day and a half to wade through the entire set of eight books. It will take him much longer to absorb and assimilate all this material.

And if the Majestic distributor, dealer or salesman can envisualize the relation of the plan to his own business, he will be liberally educated.

Pleased was the Valve to find himself quoted in one of the leather-bound manuals. Further pleasure was aroused by such paragraphs as these:

"Follow the editorial matter constantly appearing on refrigeration in such periodicals as ELECTRIC REFRIGERATION NEWS.

"Recent issues of ELECTRIC REFRIGERATION NEWS contained such articles as 'How to Get Prospects,' 'Better Displays,' 'Successful Merchandising Plans' and others of similar value to every refrigerator salesman. What a wealth of information for the dealer and his salesmen! What material for talks at meetings—for correspondence with dealers after you leave them!

"Remember this. You are *not* selling refrigerators to a dealer. You are selling him plans and ideas and suggestions whereby he can turn a unit of merchandise into a unit of cash and make a profit."

Most elaborate of the eight briefs is a 47-page, 11x14-in. book which is supplied to master dealers as soon as they have been approved as such. The book informs the dealer that he has been selected as one of the new organization's members because of his record as a reputable merchant, and then launches into discussion of the plan itself.

One section is devoted to a listing of advantages which Majestic master dealers will have by virtue of their appointment. Among these are: More frequent visits, and training for salesmen by factory representatives; sales promotion materials prepared solely for the master dealer group; an electric store display sign contributed by the factory; newspaper and direct-mail advertising materials at special prices; a maximum discount from their distributors.

A store display background furnished by the factory; a new retail salesman's handbook; increased aid from distributors in securing and training salesmen.

Next section of the general plan book outlines what the master dealer will be required to do as a member of "the 1,000." He must set up a sales objective of not less than one refrigerator per week, for all seasons of the year. He must pledge himself to avoid undermanning his sales force.

He must maintain during the entire year window displays featuring Majestic refrigerators, and must do some form of advertising the year 'round. His refrigerator line must be exclusively Majestic. He must make all minor adjustments promptly on Majestics he has sold.

Last 27 pages of the book are devoted to a picturization of sales promotional equipment and material available to the master dealer, such as direct-mail pieces, cutaway compressors, newspaper advertisement mats and electros, recipe books and display signs.

To the last page of the book is attached a blank form of the contract which each dealer is required to fill out before becoming a member of the selected group, and which must be approved by both distributor and factory before any dealer is given the title of "master dealer."

This contract, when filled out completely, is designed to present a clear picture of the prospective master dealer's business set-up, as it questions the dealer concerning his type of organization, number of years in business, his bank, his experience as a refrigeration dealer, his present stock of units, his sales volume, number of salesmen, willingness to advertise throughout the year, etc.

Companion book to the general outline of the Master Dealer Plan is another entitled, "Manual of Conduct for Majestic Master Dealers." This is the dealer's textbook. It tells him, in detail, how to do his part of the work.

Section 1 discusses a dealer store. It points out features which should be incorporated in the dealer's store front, window displays, store entrance, store display of refrigerators and general atmosphere. Second section treats dealer advertising.

Newspaper advertising, the book states, is effective and profitable only when the dealer's advertisement dominates the page on which it is printed. Dominance is to be gained by the liberal use of white space.

Use of direct-mail pieces, folders and booklets is urged. As to billboard and other types of advertising, the book reminds master dealers that these should be used only to support newspaper ads. It is suggested that the master dealer set up an advertising budget of 10 per cent of his anticipated retail sales for the year.

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Here's a thought:

**In the discussion of the selection and supervision of salesmen, dealers are instructed to employ only "happy" salesmen. We like that. And even today plenty of the naturally "happy" type may be found.**

**After locating these buoyant fellows, the idea is to school them thoroughly, start them in the field in company with veteran salesmen, give them technical training, make them plan their work scientifically, give them exclusive territories and monthly quotas, require daily reports, hold sales contests frequently, keep prospect files and use every effort possible to secure good prospect names.**

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Next section gives hints on developing and closing sales, while Part 5 emphasizes the importance of supplying service, where necessary, promptly and satisfactorily.

As to the dealer's selection of salesmen, "The frequently expressed opinion 'he doesn't cost me anything—he's working on commission,' betrays an utter disregard for the fact that every sale lost to a competitor is a profit lost to the house. The most costly luxury a master dealer can contemplate is a poorly trained, inefficient salesman—no matter on what basis he may be working! Not only is he not *producing* business; he is probably driving it away from the house he represents."

Sales structure, says the book, is made up of the following steps: calls, investigations, interviews, demonstrations, new prospects and night appointments.

Control of salesmen is as important as proper selection, the manual explains, and may be exercised in several ways. Each salesman should be given an exclusive territory. The dealer should divide the salesman's yearly sale-unit quota into reasonable monthly quotas. A suggested quota distribution is offered: January, 2 per cent; February, 2 per cent; March, 7 per cent; April, 13 per cent; May, 17 per cent; June, 14 per cent; July, 11 per cent; August, 9 per cent; September, 8 per cent; October, 6 per cent; November, 4 per cent; and December, 7 per cent.

Each master dealer should appoint a supervisor to direct salesmen's work. He should have a sales contest under way at almost all times. The salesman should be required to keep a prospect file and record, the records being in charge of the sales supervisor who will see that the salesman does not neglect to call on prospects merely because they seem difficult.

Importance of securing new prospects is emphasized. Prospect-producers listed in the manual are: Majestic users, meetings of club and church women sponsored by dealers, newspaper and direct-mail advertising, courteous inquiries by service men, cold canvassing, telephoning, marriage notices, birth notices, regular customers of the store.

It is suggested that master dealers grade salesmen in two classes—junior and senior, the seniors to do actual selling, the juniors to carry on all canvassing operations and receive a share of the commission when sales are made to prospects they have discovered.

Third of the company's new publications is a retail salesman's manual. This leatherette-covered book, (which can be folded and snapped so as to fit into an inside coat pocket) is furnished by Majestic distributors to all retail salesmen. It is in five parts, each part being devoted to one phase of electric refrigerator salesmanship.

First comes "selling the need for an electric refrigerator," with information which the salesman may use in discussing food preservation, convenience, economy and pride offered by an electric refrigerator to its owner.

Second is "selling the maker," and contains facts about the Grigsby-Grunow Co., its refrigerator plants, and its activities in the radio industry.

"Selling the Majestic" is the third section of the manual, and supplies information on: estimating which Majestic model should be sold to various prospects, the Majestic compressor, cost of operation, how to sell higher-priced models, features to be given special emphasis, specifications of each model definition of terms, etc.

Part 4 is devoted to "meeting objections," and suggests points which the salesman may use in combatting those arguments which prospects often use to stop sales presentations. Last section instructs the salesman to link his presentation, wherever possible, with current Majestic advertising of all kinds. One point throughout the manual is special emphasis placed: that the salesman should dramatize his sales talk whenever opportunity permits.

No. 4 of the plan-book group is a presentation of the Master Dealer Plan to Majestic distributors. It is the distributor's "how" book, and sets down in orderly fashion those duties which are the distributor's in placing the new plan in operation.

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Duties of a distributor:

He must first acquaint every member of his own organization with the Master Dealer Plan. He must assign each of his field men to a specific area in which master dealers are to be appointed.

He must establish a maximum discount to be offered master dealers. He must submit to Grigsby-Grunow Co., for final approval, all recommendations for master dealer appointments, before a franchise is awarded.

He must install a store display sign furnished by the factory, in the master dealer's store, and pay one-half of the cost of a display background for the master dealer's store, also to be installed by the distributor.

He must supply manuals to all retail salesmen in dealerships under his supervision. He must help his master dealers plan advertising campaigns. He must hold frequent sales meetings for his dealers' salesmen. He must develop other Majestic dealers for promotion to positions as master dealers.

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Book No. 5 is a "Manual of Procedure for Majestic Distributor Salesmen."

First 16 of its 39 pages carry one message to distributors' field men: that they must be instructors, not back-slapping visitors, as they work under the new plan of operation. The manual outlines, point by point, what they should do, and how to do it.

Part 2 of the book is a discussion of various methods of promoting sales by dealerships. It suggests specific types of contests, tells how they may be used, and urges all distributor salesmen to put them into practice in all dealerships.

Two books of the set have as their purpose that of preparing all distributors for a new activity in the Majestic organization, which is being initiated concurrently with the Master Dealer Plan—organized quantity selling to apartment houses, flats and sizeable institutions of all types.

According to one of the two books dealing with this subject, all Majestic distributors in cities of 15,000 or more persons are required to establish in their organization a separate department for "quantity sales" (four or more units in one sale). At least one man must be assigned to this work, with as many assistants as the size of the city warrants.

Dealers in each distributor's area will work in their own localities as representatives of the distributor in soliciting sales to apartment houses, public institutions, etc.

Where there is more than one Majestic dealer in a city, the distributor shall appoint one as "key dealer" to secure this business. A distributor's representative will aid the key dealer in closing quantity sales.

The quantity selling manual outlines the importance of quantity selling, tells distributors how to establish departments for soliciting this business, and lists suggestions as to parties who should be contacted in making quantity sales.

Second of the two books dealing with quantity selling is in the nature of a folder presenting to distributors a new series of mailing pieces which are intended to inaugurate the Grigsby-Grunow Co.'s "first organized bid for quantity sales."

Last of the Master Dealer Plan briefs is one announcing an agreement by Grigsby-Grunow Co. with Commercial Credit Companies for handling of deferred payment contracts held by Majestic dealers.

The Commercial Credit organization will henceforth assume responsibility for financing and collection of such deferred payment contracts as are approved by distributors and accepted by the finance company.

This service will be made available to distributors and their dealers by special contract between the factory and the distributors.

Commercial Credit representatives will contact Majestic dealers periodically, when sales are heaviest. These representatives will work cooperatively with distributor salesmen in educating dealers on matters pertaining to "time" selling.

## *This Is No Bull*

Three hundred salesmen staged a 15-minute parade as Dick Cooper, president of R. Cooper Jr., Inc., Chicago G. E. distributor, appeared on the stage to open the organization's fall sales campaign and announce his candidacy for the presidency of Refrigerania at a meeting on Sept. 9. Behind him is the salesmen's oath of allegiance—in political poster form.

## G. E. SALESMAN GETS ORDER FOR 14 WATER COOLERS

NEW YORK CITY—A contract for 14 General Electric model DP1 water coolers, secured from Radio-Keith-Orpheum for installation in the Radio City Center by William Aronstein, salesman, helped account for the record water cooler sales made by the commercial department of Rex Cole, Inc., General Electric distributor in New York City, during the month of August, according to L. Howard Jenks, Jr., manager of the commercial department.

H. C. Vietor brought in another large order for seven DP1 and two DP3 water coolers, bronze finish, for installation at McCall Co.

## SMITHSON HOST TO 'STAR' FRIGIDAIRE MEN

DAYTON — Roy Smithson, district manager of Ohio, Kentucky, Indiana and Tennessee for Frigidaire Corp., is taking his star salesmen on a river cruise, leaving Cincinnati at 5 o'clock Monday evening, Sept. 19.

## Fred Harvey Forms 'Whisker Club'

NEW YORK CITY—"The Whiskers Club," to be composed of leading salesmen from each division and each dealership, has been newly organized by Fred T. Harvey, eastern regional manager, General Electric refrigeration department.

The sales promotion manager of each distributorship will have charge of the club in his area.

Each member of the club will receive an emblem, as well the manager. The insignia are so designed that for accomplishment in future drives, a jewel may be added.

This club has been formed in connection with the Monitor Top Election Campaign, sales contest being conducted by General Electric Co., and at the close of the campaign club members will be feted at a gathering with the highest salesman of the entire group as toastmaster.

Upon induction into the club, each man will receive a testimonial signed by P. B. Zimmerman and Mike Mahony.

## REQUESTS FOR INFORMATION

Please refer to the 1932 Refrigeration Directory and Market Data Book for a complete list of all manufacturers of refrigeration equipment, parts, materials, supplies and accessories; also for all available statistical data on sales of refrigeration equipment, distribution methods, etc.

To obtain a copy of this book send $2.00 to Business News Pub. Co., 550 Maccabees Bldg., Detroit, Mich.

Advertisers will be given preference in published answers to requests for buyer's guide service, but a complete list of all known suppliers will be mailed if stamped, self-addressed envelope is enclosed with inquiry.

Readers who can be of assistance in furnishing correct answers to inquiries, or who can supply additional information, are invited to address Electric Refrigeration News, mentioning query number.

### Hydrolene

*Query No. 948* (Plumbing supplier, Ohio)—"We have made a thorough inspection of the REFRIGERATION DIRECTORY to locate a source of supply for Hydrolene, a plastic compound that is softened by placing in hot water, and is used in electric refrigeration installations to cover and seal joints between fittings, flare nuts, and tubing to prevent leaks, being applied over outside of nut to cover the entire joint."

*Answer*—Hydrolene is the trade-name of the Sun Oil Co. for its plastic compound answering to your description. Similar products of other companies are listed under "asphalt emulsions" on page 197 of the DIRECTORY.

### Fur Storage Vaults

*Query No. 949* (Refrigeration service company, Illinois)—"Can you supply information regarding manufacturers of equipment for fur storage vaults?"

*Answer*—Fur storage is now regarded as a low-temperature air-conditioning problem, requiring a forced convection air-cooling unit and a commercial refrigerating machine. These should have sufficient capacity to reduce the temperature of the storage room to 10 or 15° F. for short periods of time, to kill young moths.

Although no classification of fur storage equipment was made in the 1932 REFRIGERATION DIRECTORY and MARKET DATA BOOK, most large manufacturers of commercial refrigerating machines can supply equipment for this purpose. Please refer to page 299 of the DIRECTORY for manufacturers of commercial systems.

### Coin Meters for $0.50 and $1

*Query No. 950* (Refrigeration dealer, Texas)—"Will you kindly advise us of manufacturers of coin-operated mechanism devices that will operate on $0.50 and $1 denominations. We have already inquired of the Mills Novelty Co., and they manufacture only a $0.25 mechanism. Our reason for wanting the larger denomination is that we want to use it on commercial refrigeration."

*Answer*—Nine manufacturers of coin meter devices are listed on page 211 of the 1932 REFRIGERATION DIRECTORY and MARKET DATA BOOK. Although our records do not show which of these make meters for the larger coin denominations, any information about such devices may be obtained by writing direct to them.

### "Tylac" Breaker Strips

*Query No. 951* (Range manufacturer, Ohio)—"We are endeavoring to locate a company manufacturing 'Tylac' fibre breaker strips as used in electric refrigerators. This name does not seem to appear in your 1932 REFRIGERATION DIRECTORY.

*Answer*—Any information about this product will be highly appreciated by editors of the NEWS.

### Kerosene Refrigerator

*Query No. 952* (Refrigeration distributor, Pennsylvania)—"We have a prospect inquiring for a refrigerator to be used in a town having no gas or electricity. We informed the gentleman that there is a machine with a tank attached which will give refrigeration for 24 hours. Will you kindly advise us the manufacturer of this machine, and where it can be obtained."

*Answer*—Both the Perfection Stove Co., 7609 Platt Ave., Cleveland, and Montgomery Ward & Co., Chicago, are supplying an absorption type of refrigerator which operates with kerosene.

## G. E. GETS CONTRACTS FOR 170 UNITS

WASHINGTON, D. C.—A contract for a minimum of 170 General Electric refrigerators to equip various shore stations of the U. S. Navy has been awarded the National Electrical Supply Co. here, according to C. L. McCrea of that firm.

The specifications were called for on an evaluated bid—the final award being made on the basis of the first cost, plus current consumption, maintenance, etc., over a period of years.

The government called for tests to confirm the test data furnished by the various manufacturers. On the basis of these tests, the government added to the price quoted by the manufacturer the cost of maintenance and current.

## EXPORT SHIPMENTS DECREASE IN JULY

WASHINGTON, D. C.—Resulting primarily from a reduction in shipments of electric refrigerators, mineral oils, wheat, copper, typewriters and lumber, United States exports in July dropped to $107,000,000, a decrease of six per cent as compared with June, according to the survey of current business issued by the Department of Commerce for September.

Imports dropped to $79,000,000 from $111,000,000, a decline of 29 per cent, the survey shows.

Retail and wholesale trade recorded some moderate gains in individual lines during July, but aggregate trade showed a decline in excess of normal for this season.

Some smaller retail establishments reported a satisfactory volume of goods sold and wholesalers and jobbers have been kept active by constant reorders resulting from the low retail stocks carried by many concerns, the report states.

### Broader Buying Movement

During the third week of August, the improvements in business sentiment found some reflection in trade channels, and the larger retail establishments reported a broader buying movement with a good early demand for moderate-priced fall merchandise, according to the mercantile reviews.

Due partially to higher commodity price levels, sales in rural districts are reported to be in comparatively better volume than in the cities.

Department store sales receded to the lowest point reported in several years. The decline, which was greatly in excess of the usual seasonal contraction, caused the adjusted index to fall six per cent below the level of June. Compared with July, 1931, the adjusted sales figures show a loss of 26 per cent.

Sales through the principal chain stores for the month show the largest relative decline in comparison with a year ago of any month of the depression. Sales of the leading mail-order houses decreased 20 per cent below June, a decline considerably in excess of that normally experienced at this period of the year.

### L.C.L. Freight Off

Distribution of package freight, as indicated by l.c.l. freight-car loading, continued its downward trend in July, after a brief period of steadiness. The seasonal adjusted index remained during June at the May level, but a loss of 2.8 per cent in July brought the figure for that month 15 per cent below the same month last year.

Employment figures for July reveal a further important decline in the number employed in industry, accompanied by a relatively large decline in earnings. Factory employment was off 3.2 per cent and factory pay rolls by 7 per cent, thus indicating a further substantial shrinkage in purchasing power.

Larger awards for public works and non-residential buildings were responsible for the increases in value and measurable footage of total construction contracts let during July. The Middle Atlantic States, the Pittsburgh, Chicago and New York City territories, in order of their importance, sponsored awards totaling more than 50 per cent of the value of all contracts for the month.

Awards for the month were above the average established for the first seven months of the year, and the increase was contrary to the normal summer recession in construction. Total value of all contracts let so far in 1932, however, was but 38 per cent of the amount of undertakings in the corresponding period of 1931.

The Federal Reserve Board's adjusted index of activity, based on a three-month moving average of values centered on July, declined slightly from the revised figure for June as a result of the drop in contracts awarded so far during August.

Residential buildings awards continued a decline which has been unbroken since March. A year ago the value and measurable footage were both approximately three times as large. The enactment in July of the Federal Home Loan Act was a constructive development.

Activity in the chemical and allied products industry, as measured by electricity consumption, picked up slightly in July from the low level reached in June, the increase being, however, somewhat less than the usual seasonal increase at this time.

Wholesale prices of food products advanced four per cent in July, with the general upswing in commodities, after an uninterrupted decline of almost a year. Further gains have been scored during the current month, particularly in farm products.

## THE CONDENSER

PAYMENT IN ADVANCE is required for advertising in this column. The following rates apply:

POSITIONS WANTED—Fifty words or less, one insertion $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each. ALL OTHER CLASSIFICATIONS—Fifty words or less, one insertion $3.00, additional words six cents each. Three insertions $8.00, additional words sixteen cents each.

REPLIES to advertisements with box numbers should be addressed to the box number in care of Electric Refrigeration News, 550 Maccabees Building, Detroit, Mich.

**EQUIPMENT FOR SALE**

CLEARANCE SALE of reconditioned Frigidaire equipment, model K 1/3 horsepower, model N ½ horsepower, model C 1 horsepower compressors. Coils model 14F, 17F, 18F, 63F, 78F, 96F household coils, ice cream cabinets, etc. Write for list of equipment. We buy Frigidaire equipment and parts. Lawton Huffman, Marshalls Creek, Pa.

**Trained Men Available**

When in need of practical, trained shop mechanics, sales, installation or service men, patronize this FREE Placement Bureau. We have competent, trained graduates available in every locality, to meet your requirements. With or without experience. No charge to the men or to you. Write, phone or wire.

**Utilities Engineering Institute**
Placement Division
Dept. 992 404 No. Wells St., Chicago

## DISPLAYS AT STATE FAIR

INDIANAPOLIS — Peerless Electric Co., Gibson distributor here, had a Gibson electric refrigerator display at the Indiana State Fair recently.


# BUYER'S GUIDE

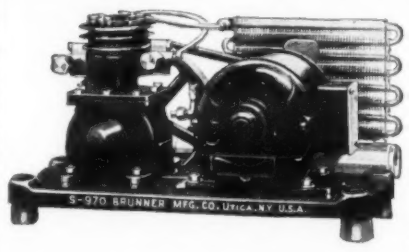
*Manufacturers Specializing in Service to the Refrigeration Industry*

SPECIAL ADVERTISING RATE (this column only)—$12.00 per space. Payment is required monthly in advance to obtain this special low rate. Minimum Contract for this column—13 insertions in consecutive issues. All advertisements set in uniform style of type with standard border. Halftone engravings of 100-line screen, either outline or square finish. No reverse cuts or heavy black effects. No charge for composition.

## BARE COMPRESSORS

New 1/6 H. P. Twin 1¼" x 1¼"
For Sulphur Dioxide or Methyl Chloride
Other Sizes 1/6 H. P. to 50 H. P.

**H. C. PARKER, LTD.**
2627 Santa Fe Ave. (Factory), Los Angeles, California
392 Clifton Ave., Newark, N. J.
510 Larkin St., San Francisco, Calif.
734 M. & M. Bldg., Houston, Tex.
237 Roosevelt Bldg., St. Louis, Mo.
37 W. Van Buren St., Chicago, Illinois



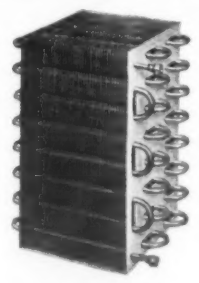

There's Profit for You in Getting the Facts about

**BRUNNER**

High Sides and Compressors

Brunner Manufacturing Co. *Refrigeration Division* Utica, N. Y.

## A NEW FIN COIL *by* PEERLESS



Wedge-locked and edge-locked aluminum fins on tinned copper tubing for methyl chloride, sulphur dioxide, F-12, etc.,—aluminum tubing for ammonia.
Absolute Metal to Metal Contact.
A Superior Coil in which Soldered Return Bends have been eliminated.
Priced to meet 1932 conditions.
Write—Wire for Catalog.

**PEERLESS ICE MACHINE CO., 515 W. 35th St., Chicago, Ill.**

## We will make it for you!

We are perfectly equipped for quantity production of light or heavy mechanical parts or units. Precision manufacture and rapid delivery. Unusually moderate charges.

**Indian Motocycle Co.**
Springfield, Massachusetts

Completely assembled and individually bagged. Ready for shipment in your refrigerator. Write for complete list of standard sizes and prices.

**Hoosier** *Standardized* **Parts**
HOOSIER LAMP & STAMPING COMPANY, EVANSVILLE, IND.


## COMBINATION SUBSCRIPTION RATES

How to save money on your subscription order

| NO. | PUBLICATIONS | YOU PAY | YOU SAVE |
|---|---|---|---|
| 1 | Electric Refrigeration News (1 Year) and Refrigeration Directory and Market Data Book | $4.00 | $1.00 |
| 2 | Electric Refrigeration News (2 Years) and Refrigeration Directory and Market Data Book | $6.00 | $2.00 |
| 3 | Refrigerated Food News (1 Year) and Refrigeration Directory and Market Data Book | $2.00 | $1.00 |
| 4 | Refrigerated Food News (1 Year) and Electric Refrigeration News (1 Year) | $3.50 | $ .50 |
| 5 | Refrigeration Directory and Market Data Book and Electric Refrigeration News (1 Year) and Refrigerated Food News (1 Year) | $4.50 | $1.50 |
| 6 | Refrigeration Directory and Market Data Book and Electric Refrigeration News (17 Weeks) | $2.00 | $1.00 |

Order by number. Use coupon below. These rates for U. S. only.

## Group Order Rates for U. S. and Foreign Countries

| PUBLICATIONS | NUMBER | UNITED STATES* | CANADA† | ALL OTHER COUNTRIES |
|---|---|---|---|---|
| Electric Refrigeration News | 1 subscription | $3.00 | $6.00 | $4.00 These foreign |
| | 5 or more, each | 2.75 | 5.75 | 3.75 rates will |
| | 10 or more, each | 2.50 | 5.50 | 3.50 be increased |
| | 20 or more, each | 2.25 | 5.25 | 3.25 on or before |
| | 50 or more, each | 2.00 | 5.00 | 3.00 Jan. 1, 1933. |
| Refrigerated Food News | 1 subscription | $1.00 | $2.00 | $1.50 These foreign |
| | 5 or more, each | .95 | 1.95 | 1.45 rates will |
| | 10 or more, each | .90 | 1.90 | 1.40 be increased |
| | 20 or more, each | .85 | 1.85 | 1.35 on or before |
| | 50 or more, each | .80 | 1.80 | 1.30 Jan. 1, 1933. |
| BOTH PAPERS | 1 subscription | $4.50 | $7.00 | $5.00 These foreign |
| | 5 or more, each | 3.25 | 6.75 | 4.75 rates will |
| | 10 or more, each | 3.00 | 6.50 | 4.50 be increased |
| | 20 or more, each | 2.75 | 6.25 | 4.25 on or before |
| | 50 or more, each | 2.50 | 6.00 | 4.00 Jan. 1, 1933. |

*U. S. and Possessions and Pan-American Postal Union Countries.
†High rates for Canada are due to Canadian tariff of 5c per copy.

## SUBSCRIPTION ORDER

BUSINESS NEWS PUBLISHING CO., .....1932
550 Maccabees Bldg., Detroit, Mich.

☐ Enclosed is remittance for $.....
☐ Please enter my order for COMBINATION OFFER NO.....at $.....
☐ Enter subscription to Electric Refrigeration News ☐ 1 Year $3.00. ☐ 2 Years $5.00.
☐ Enter subscription to Refrigerated Food News ☐ 1 Year $1.00. ☐ 2 Years $1.50.
☐ Send 1932 Refrigeration Directory and Market Data Book. $2.00 per copy.

Name .....
Address .....
City ..... State.....
9-21-32

# Boston Conference Favors Better Sales Training, Study of Consumer

*(Concluded from Page 1, Column 5)*

ton, president, American Marketing Society.

Carl P. Dennett, Federal Reserve official; George M. Gottfried, vice president, Continental Baking Co.; Charles Coolidge Parlin, research manager, Curtis Publishing Co.; E. St. Elmo Lewis; Harry W. Alexander, and an all-American faculty of professors of marketing and business administration.

Harry Alexander's highly interesting speech on the development of coin-machine merchandising is reported on page 2 of this issue. Complete reports of other especially significant speeches will appear in the Sept. 28 issue.

### Women Flay Poor Quality

Most dramatic moments of the sessions came at the close of the Monday afternoon discussions when a number of women in the audience, aroused to a spontaneous outburst by the ringing plea for quality goods orated by Mrs. Gladys Beckett Jones of the Garland school and Vassar, gave vent to high indignation over the number of times they have been stung on shoddy merchandise they have bought during the last two years.

Disillusionment is preventing American women from rising to the bait of low prices today, declared these women, who included wives of visiting sessioners, women journalists and school teachers.

Answering this verbal attack on the integrity of manufacturers and merchants, department store executives declared that they are in business to give the public what it wants, and that since early 1930 American women have been avid price-hounds.

"It's all your fault," shouted the department store men. "You wouldn't buy unless it was cheap, and you got what you paid for."

### Misled by Advertising

"But you misled us," cried the women. "Your advertising didn't tell us that quality had been sacrificed."

Mrs. Jones said that in 1929 women purchased style; in 1930 they bought low-price tags; in 1931 they ceased spending, and in 1932 they are in the market for quality only.

According to Mrs. Jones, Vassar girls are asking:

"Teach me how to recognize good cloth by feeling it, just like grandmother used to do. What is the difference between the kind of linen I must buy if I send it to a laundry and the kind to be used with a washing machine? Why don't home products have labels or insignia showing that they have been tested by responsible bodies?"

### Necessity for Training Salesmen

Speaker after speaker emphasized the necessity of training salesmen. Today, apparently, customers want all the information they can get before they buy. They have learned to be suspicious, and they refuse to take money out of the sock unless they know exactly what they are receiving in exchange.

No matter how thoroughly you have schooled salesmen on your products and policies and service previously, speakers agreed, that education is probably inadequate today. A well-informed sales force will be the biggest single factor in 1933 success, it was predicted.

### Defends 'High-Pressure' Type

Dr. Herbert W. Hess of the University of Pennsylvania came brilliantly to the defense of the so-called "high-pressure salesman."

The cumulative effect of their efforts to raise the standards of living is economically sound, he averred.

Resentment aroused by their methods almost invariably gives way to satisfaction in the product sold, according to Prof. Hess.

"Sales training should be more scientific and less spasmodic," stated this scholar. "Salesmen must be guided constantly and scientifically through keen supervisors and educational directors to get maximum returns.

"It is true," he admitted, "that the experience of the last 20 years shows a constant adherence to the original orthodox conception that personality is a consequential factor in determining sales. Today, however, knowledge of the buyer and his environment is even more important than exploitation of personality."

### Cites Replacement Cycle

T. M. McNeice offered the interesting theory that all industries have their ups and downs based on their replacement cycle. Occasionally these individual rises and falls of separate industries coincide. Whereupon we have a major boom or depression.

Operation of the replacement cycle depends upon the life of the article, he observed. McNeice cited clothing as overwhelmingly a replacement market, automobiles as largely a replacement market, and electric refrigerators as preponderantly a first-time market.

Style is probably the most important factor in replacement sales, he indicated.

Major booms and depressions, according to this market analyst, are becoming sharper and deeper. As the standard of living rises (the acquisition of more and more articles further and further removed from bare necessity levels), more and more people depend upon the production and sale of so-called "luxury" class of products.

Higher the standard of living, the greater the elasticity of demand. Yet, he pointed out, the bottom of each depression finds the lowest income groups in better shape than they were at the bottom of any previous depression.

"Chief hardships of a depression," he smiled, "are doing without things our grandfathers never had."

William H. Lough, president of Trade Ways, Inc., quoted and analyzed a carload of statistics (over which any average individual would have coughed frequently) in proving that marketing costs are not rising.

### Teagle's Address Popular

No address attracted more attention than that of Mr. Teagle, president of Standard Oil Co. of New Jersey, because he is serving as chairman of the coordination committee of the "share-the-work" movement at the request of President Hoover and his scheme worked out with his own company during the past two years has been effective in aiding unemployment.

In starting his talk, Mr. Teagle remarked, that he "believed that we are emerging from the depression, definitely and on a basis which gives promise of real stability." Widespread spending power, he said, is needed to start prosperity, and that must come through more men at work.

He estimated that 10,000,000 are out of work in the United States. He said that the employers who have work and the men and women who are now working for them can accomplish this result, build up spending power, the latter by sharing their work with unemployed.

The employers, he maintained, hold the key to this situation and stated that his company has put 3,000 men at work in this way—by division of the wage dollar.

"If this does involve some increase in supervision costs, reflected in larger overhead," Mr. Teagle said, "would you not willingly have absorbed this increased overhead all these months if by so doing you could have routed the depression and developed a steady flow of sales and orders?"

### Embraces All Plans

Mr. Teagle pointed out that this is not a five-day-week movement, nor a six-hour-day movement, "but is broader in its conception and embraces them all. Expressed in a sentence or two, it is the application of flexibility to the working period, whether it be the day, the week, the month or the season, and to the working force, or to particular groups."

The plan briefly, is to reduce the working hours of the present force and increase the number of employes accordingly.

There are three objectives in the plan:

(1) To check the upward trend of unemployment, when work is reduced for seasonal or other reasons, by employing the greatest possible number of workers, thus avoiding adding to unemployment.

(2) To decrease unemployment by a wider spreading of work now available among a larger group of employes working shorter periods rather than by employing a smaller group working longer periods.

(3) Whenever an increasing volume of business permits employing additional personnel, to do so by distributing the increased work to the greatest number rather than by working longer schedules.

### Parlin Describes Survey

Mr. Parlin, research manager, Curtis Publishing Co., told of a survey conducted among the pantries of 3,000 homes from the "real Fifth Avenue residences" to the "negro shacks of Birmingham," to see what and why they purchased certain kinds of goods.

He declared that in making the survey, the best work had been done by college-bred women who were married and knew how to run their own kitchens. The aim was to find out "how the wheels went around in the head of the housekeeper."

"We found," he said, "that the 'four hundred' actually knew what went into their pantries and most of them seemed surprised when we thought this specially interesting. They said they had to know in order to get the right things on their tables."

Mr. Parlin said that it was found that 71 per cent of the purchases were made on cash-and-carry terms and 42 per cent of such purchases were from chain stores.

Also it was found that most women were in the habit of buying the bulk of their supplies from one store. This was the result of falling into a habit.

When these buyers were asked why they first started buying at a particular store they usually answered that it was because they knew they could find a certain brand or brands of goods there.

Women buyers, he said, had alert and open minds. Some objected to being offered "something just as good" and others said they didn't mind "because they always did just as they pleased anyway."

The higher the women had gone in schools and colleges, said Mr. Parlin, the more they insisted on certain nationally advertised brands of goods.

### All Affected by Distribution

"Every one of us," said Mr. Conrad, "—whether he be manufacturer, wholesaler, retailer, agriculturist, banker, economist of consumer—is affected by success or failure of methods of distributing goods.

"The complexities of our modern business structure raise many problems which require intensive study and discussion. Possibly owing to the long period of depression, old and tried methods of doing business seem to have been forgotten.

"Many merchants have lost their perspective; they have lost sight of the fact that the trials we are going through are not permanent, and that we must use sane, cool judgment in meeting our problems at this time. They are not new but are more disturbing because of the prolonged period of business depression.

"The high degree of specialization that has become necessary to insure success in the distribution of goods makes it more important than ever that we study and discuss problems that are common to us all. I know of no better way than through such a forum as this conference.

### Broad Business Outlook

"A business man's outlook must go beyond the walls of his own establishment if he is to be successful.

"If he can see his own business in perspective; if he can grasp the significance of economic trends and changes as they relate to his own business; if he can obtain a clearer understanding of the consumer, he need not worry much about making a success."

Mr. Conrad called attention to the National Economy League, declared that "taxes must yield to reason" and said: "The only way we can stop well-organized minority groups from demanding favors for themselves from the government is to organize great majority groups to combat the growing evil." He urged all to assist the league's efforts.

### Distribution and Recovery

Mr. O'Connell, president, National Retail Dry Goods Association, said that "with the turn general business conditions have taken during the past two months, I believe we are safe in feeling that the backbone of the depression has been broken and that a new period of business recovery lies before us.

"In making this recovery retail distribution is an important factor. More than 94 per cent of all the industrial production of consumers' goods find their outlet through our retail establishments.

"On the extent that we as retailers inspire the consuming public to buy will depend in large measure the extent and speed of all business recovery.

### Leading Stores Will Buy

"Information which I recently have gathered shows that the 3,800 retail store of the National Retail Dry Goods Association will place orders during the last four months of this year amounting to at least $1,170,000,000 an amount decidedly better than would have been thought possible two months ago and well up to the volume purchased in the same period last year.

"In Boston alone it is conservatively estimated that a group of leading stores will buy at least $60,000,000 of merchandise before Jan. 1; in New York City, the estimate is $400,000,000.

"One of the most hopeful signs today is the swing back to good quality that is now apparent in the retail trade.

### Quality Essential

"Quality is an absolute essential to permanent recovery in consumer confidence and consumer buying. The consumer can trust quality goods for economical service and complete satisfaction.

"Quality breeds no regrets. It is not necessarily high priced. It is honest merchandise, honestly merchandised.

"Moreover, the manufacturers of good quality are the ones who are developing skilled labor and are paying their employes enough to give them reasonable purchasing power as consumers."

# BUREAU REPORTS SALES FOR FIRST SEVEN MONTHS

NEW YORK CITY—Sales of electric refrigerators for the first seven months of 1932 totaled 618,740, according to the Electric Refrigeration Bureau. This number is 83.6 per cent of the bureau quota for the period.

The bureau's figures show that eight states surpassed their seven months' quotas. They are Connecticut, with 109.4 per cent; Delaware, with 119.2 per cent; Maryland, with 146.3 per cent.

New York, 117.7 per cent; West Virginia, 121.4 per cent; Missouri, 104.6 per cent; Nevada, 123.7 per cent; Virginia, 132.7 per cent.

Rhode Island, Pennsylvania, Georgia and Oklahoma came close to their quota goals, all scoring more than 90 per cent.

New York, with a total of 134,025, led all the other states in gross sales for the seven months. Pennsylvania, with 59,330 was second, and Illinois, third.

NOTE—*Information collected by* ELECTRIC REFRIGERATION NEWS *indicates that estimates of 1932 sales issued by the Electric Refrigeration Bureau are too low. We understand that the bureau estimates are based largely on the reports of sales made by the eleven manufacturers holding membership in National Electrical Manufacturers' Association (Nema). The error in the estimate of sales for the entire industry is probably due to an inadequate allowance for sales made by non-Nema manufacturers*—EDITOR.


# Daily Proving their Great Value!

**Today there are More than 35,000 Mechanically Refrigerated Units giving Trouble-Free BETTER Service because they are Larkin 100% Vertical Surface Coil equipped**

*Standard factory equipment with the manufacturers whose trade-marks are shown here*

SERVEL COMMERCIAL Electric Refrigeration
WILLIAMS ICE-O-MATIC REFRIGERATION BLOOMINGTON, ILLINOIS
UNIVERSAL DETROIT, MICH.
Zerozone Lifetime Refrigeration
Electric-Automatic REFRIGERATOR PHILADELPHIA
MOHAWK REFRIGERATOR WITH THE OUZONE UNIT
DICELER
Apex CLEVELAND, O.

IMPORTANT NEWS—
In October LARKIN will announce a development of tremendous importance and value to the trade.

KINDLY NOTE—
The name of this company has been changed from the Larkin-Warren Refrigerating Corporation to the Larkin Refrigerating Corporation of Atlanta, Georgia

100% VERTICAL SURFACE
U.S. PATENT No. 1,776,235.

LARKIN COILS

LARKIN REFRIGERATING CORPORATION
*Originators and Manufacturers* :: :: ATLANTA, GEORGIA

Copeland DEPENDABLE the Refrigeration DETROIT, MICH.
MAYFLOWER
Carrier Brunswick Kroeschell REFRIGERATION
KULAIR PHILADELPHIA, PA.
STARR-FREEZE Electric Refrigeration
PHOENIX ICE MACHINE
H. M. ROBINS COMPANY EXPORT
EXPORT

WRITTEN TO BE READ ON ARRIVAL

# Engineering Section

IN TWO PARTS PART TWO

# ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office

The business newspaper of the refrigeration industry

VOL. 7, NO. 3, SERIAL NO. 183

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DETROIT, MICHIGAN, SEPTEMBER 21, 1932

Aug. 1, 1927, at Detroit, Mich. Entered as second-class matter

THREE DOLLARS PER YEAR

## JARECKI DESIGNS FIN SURFACE TYPE OF EVAPORATOR

### Also Devises Accessory Shell for Existing Evaporators .

GRAND RAPIDS, Mich.—A new extended surface finned evaporator, and an evaporator shell for adding cooling surface to existing evaporators, are being introduced by the Jarecki Machine & Tool Co. of this city, according to F. J. Jarecki, president.

The new products are the result of development work by Gordon McLarty, refrigerating engineer who has joined the Jarecki firm as a consultant.

To be marketed under the trade-name "Dry-Less," the evaporators and shells are built on the principle that a greater surface of an evaporator will permit cooling of the cabinet with lower surface temperatures, and consequently with less dehydration of air and food in the refrigerator. Both are offered in aluminum and stainless steel, or in porcelain-on-steel, according to manufacturers' specifications.

The shell is designed to be slipped over the outside of evaporators in standard makes of household refrigerators, and has metal fins spot-welded to its sides to give the additional surface. In some cases, the back and door of the shell will be finned to give the necessary heat transfer surface, McLarty states.

"On most of the popular refrigerators, the cabinet temperature will be the same with the shell as without it," he explains, "if the control settings and room temperatures are the same."

Defrosting of an evaporator with the Dry-Less shell will be needed but seldom, McLarty claims, since exterior surfaces of the shell are maintained at fairly high temperatures, and the inside of the shell (where low temperatures do prevail) does not contact the circulation of moisture-laden air because the shell is equipped with a door to the ice cube compartment.

An extra tray within the shell provides low-temperature storage space for ice cubes and other frozen products.

The new evaporators are similar in

*(Concluded on Page 2, Column 1)*

## GOODYEAR'S NEW BLIMP USES MICARTA PANELLING

EAST PITTSBURGH, Pa.—When the new blimp, "The Resolute," built at Akron, Ohio, by the Goodyear Zeppelin Corp. made its first flight recently, micarta panelling was taken along.

Micarta is a laminated, molded material developed by Westinghouse Electric & Mfg. Co. In thin, walnut-finished sheets, it lines the walls and ceiling of the 12x4-ft. cabin.

The 112,000 cu. ft. of helium contained in the ship will lift only 3½ tons, so that every piece of material in the ship must be of minimum weight. Micarta was chosen for this purpose, as well as for its appearance.

## *Refrigeration Talks On Safety Council Program*

WASHINGTON, D. C.—Safety problems in practically all phases of American industry, including refrigeration, are scheduled for discussion by the speakers at the annual meeting of the National Safety Council here, Oct. 3 to 7.

The Refrigeration Section convenes Thursday morning, Oct. 6, in the Wardman Park Hotel, with reports of committee chairmen, followed by a talk on "Trend of Accident Prevention Work in the Refrigeration Industry" by Vincent Wakefield, general chairman of the section.

George Bright, consulting engineer of Detroit, will then present a report of the nominating committee; next L. W. Dawley of the Southern United Ice Co., Jackson, Miss., will give an illustrated talk on "Safe Handling of Ice," and to conclude the morning program, H. L. Trask, general superintendent, United States Cold Storage Co., Kansas City, Mo., is scheduled to give an illustrated lecture on "Safe Handling of Warehouse Goods."

The second session of the refrigeration session will be held the following morning and includes an illustrated discussion of "Maintenance Hazards of the

*(Concluded on Page 2, Column 3)*

## 185 MEN GO TO WORK ON NEW OIL-O-MATIC

BLOOMINGTON, Ill.—With the introduction of a new Oil-O-Matic model, the Williams Oil-O-Matic Heating Corp. has put 185 additional men to work. Night shifts are being maintained in the majority of departments, and production is based on a seven-day, seven-night working schedule.

The new Oil-O-Matic is known as model KB. It is a refinement of model K introduced last year. Features of the new burner are a reduction of combustion and mechanical operating noises; reduction of current consumption and simplification of parts of the burner; accessibility of all parts; ease of removal of burner assembly, metering pump and other units; simplified control, and the use of low voltage thermostat with two wires.

The motors used on the new model KB Oil-O-Matic, as well as the relay which controls the starting, are made entirely within the walls of the Williams factory. The motor is of the squirrel cage induction type.

A local sales campaign was held during the month of August, and 80 Oil-O-Matics were sold.

## CHICAGO A.S.R.E. TO DISCUSS INSULATION ON SEPT. 27

CHICAGO—"Moisture Migration in Insulation" will be discussed by H. F. McPherson on Tuesday night, Sept. 27, as the season's first meeting of the Chicago section of the American Society of Refrigerating Engineers. The meeting will be held at the Chicago Engineers' Club, according to Ben E. Seamon, secretary of the section.

## 3 CONVENTIONAL MODELS INCLUDED IN NEW G. E. LINE

### 'General Electric Junior' Chosen as Name For Product

CLEVELAND—That General Electric Co.'s new low-priced conventional line will include three units instead of the one already on the market, and that the new line will be called "General Electric Junior" was the context of an announcement made last week by P. B. Zimmerman, manager of G. E.'s refrigeration department, in formally introducing the new product to the public.

As reported by ELECTRIC REFRIGERATION NEWS, one model of the new machine (5-cu. ft.) has been introduced to General Electric distributors during the past month, but it was not generally known until last week that the line would include three models, with 4, 5, and 7 cu. ft. of food storage capacity. The additional 4- and 7-cu. ft. models will be introduced during October.

The list price on the 5-cu. ft. model is $135, according to the announcement, and the prices of the other conventional models will be correspondingly low. They carry a standard one-year guarantee.

Plans are now being formulated to launch a national advertising campaign next month, concentrating largely on the hermetically sealed Monitor Top, and introducing the General Electric Junior, Mr. Zimmerman stated.

### *Ammonia*

**Of special interest in this issue is an article on page 4 by R. J. Quinn, Mathieson Alkali Works, on the properties of ammonia, the refrigerant of pioneer refrigerating engineers, now widely used in commercial and industrial refrigeration.**

**Mr. Quinn outlines the physical and thermal characteristics of the refrigerant, and, by comparison of old with new specifications, shows how manufacturers have produced a gas to meet increasingly rigorous requirements.**

## AGENTS APPOINTED TO SELL ELECTROZONE EQUIPMENT

ST. LOUIS—The Air Conditioning and Engineering Co., 3331 Rutger St., here, manufacturers of Electrozone equipment, have appointed the following representatives for the sale of its products in the territories named:

Wagner Peterson Corp., 53 Fourth St., Portland, Ore., for the states of Washington and Oregon; J. M. Robb, 1513 Columbia Terrace, Peoria, Ill., for Knox, Peoria, Tazewell and McLean counties in the state of Illinois; W. C. Green Co., Cincinnati, for the southern part of Ohio, and A. M. Chase, Houston, Tex., for the southern part of the state of Texas.

## ALLEGHENY TO MANUFACTURE 2-PLY STAINLESS STEEL

CHICAGO—Following the recent announcement of the Ingersoll Steel & Disc Co., a Borg-Warner division here that it has developed and patented a two-ply stainless steel, comes the more recent news of the consummation of an agreement with the Allegheny Steel Co. of Brackenridge, Pa., by which the latter will manufacture two-ply stainless steel sheets exclusively under the patents of the Ingersoll company.

## PENN SWITCH NAMES CARR NEW ORLEANS AGENT

DES MOINES, Iowa—E. W. Carr, Inc., New Orleans, has been appointed manufacturer's representative in Louisiana and the southern half of Mississippi for the complete line of Penn controls for refrigeration, air compressors and pumps, according to Albert Penn, president of the Penn Electric Switch Co.

## *Winters, Crampton Design Flexible Door Lock*

GRANDVILLE, Mich.—Designers of the Winters & Crampton Mfg. Co. here have just produced a new refrigerator lock by which the housewife can open the door to her refrigerator without the use of her hands. The new latch is now being shown to engineers and manufacturers of complete electric refrigerators, according to B. R. Crampton, president.

It is operated by pressure against the handle of the body or arm, depending upon the position of the refrigerator's food compartment, Mr. Crampton explains. Similar in appearance to existing lock handles, this new one is available in either bakelite or chromium-plated brass.

The chief feature of the lock is the fact that it is operative with the lever in any one of four different positions, horizontally to the right or left, and vertically up or down. The refrigerator owner can set the lever in any position by slightly depressing the lever shaft and moving the lever around in a "universal joint" effect. Likewise, the lock can be opened by either pushing or pulling the lever in any of its positions.

The right- and left-hand operation also permits installation of the *same* lock on either right or left hand cabinets, reducing the size of manufacturers' stocks, Mr. Crampton points out.

## MEYER OFFERS NEW REFRIGERATED TRUCK

BUFFALO—Meyer Body Co., Inc., has announced three new gasoline-type refrigerated trucks for use in ice cream delivery, ranging in capacity from 320 gals. to 500 gals., according to W. O. Meyer, vice president.

The bodies are adaptable for use on 1½- to 2½-ton chassis and are equipped with a methyl chloride refrigerating machine located in a compartment next to the truck cab. The unit supplies 722 lbs. of refrigeration in 24 hrs. at 100° F. air condensing medium.

The bodies of the new line are insulated with 5-in. board cork and are divided into three compartments. Front compartment houses the refrigerating unit and is accessible by two louvred doors, one on either side. Ventilators are at the top of this section and louvred frames are at the front of the compartment, one on either side of the cab.

Center compartment is for carrying ice cream and is made accessible by two double battened refrigerator doors on the right side of the body and one on the left. Rear compartment is for use

*(Concluded on Page 2, Column 4)*

## N. Y. ENGINEERS TO INSPECT ICE CREAM PLANT

NEW YORK CITY—Members of the New York section of the American Society of Refrigerating Engineers will turn their attention to the subject of ice cream manufacture in the first fall meeting on Sept. 29. The meeting will start at 6:30 p. m. in the Reid ice cream plant at 141st St. and Fifth Ave., according to Ira McFarland, vice president.

## HOUSEHOLD BOX USING SOLID $CO_2$ TO BE MARKETED

### Swiss Carba Patent Now Adapted for Use In America

KENNETT SQUARE, Pa.—A household refrigerator using solid carbon dioxide will soon be introduced to the American market, according to plans recently announced by George B. Scarlett of the International Carbonic Engineering Co., which owns the Swiss Carba patents for household refrigerators.

The new Carba refrigerator will probably be shown at the Dairy Industries Exposition, which opens in Detroit on Oct. 17.

Refrigerators built under these patents have been sold for four years in several European countries, Mr. Scarlett states, several thousand now being in use over there.

The models for American use differ in design from the European make chiefly in the shelf arrangement and in the production of ice cubes. Ice trays in the American refrigerator are of conventional rectangular type, while in European models, ice was frozen as sectors of a circular freezing pan. Incidentally, requirements for ice cubes are much less in Europe than here.

As shown in the exterior view of the refrigerator on page 2 of this issue, the refrigerating equipment is mounted in a smooth, cylindrical dome atop the square cabinet. The full capacity of the cabinet may be utilized for food storage, Mr. Scarlett states.

Either of two types of insulation are used for the cabinet: six inches of corkboard, or six inches of Balsa Wood throughout. The American cabinet has a porcelain liner instead of the lead-joined marble liner used in the European models.

The Carba refrigerant container consists of a glass vacuum cylinder, fitted with sliding rubber sleeves arranged to make a gas seal which allows the gas to escape only after its temperature has risen to the point where it is no longer of use for refrigerating purposes.

The solid carbon dioxide rests on a

*(Concluded on Page 2, Column 5)*

## 1933 GRAND RAPIDS BRASS CABINET HARDWARE READY

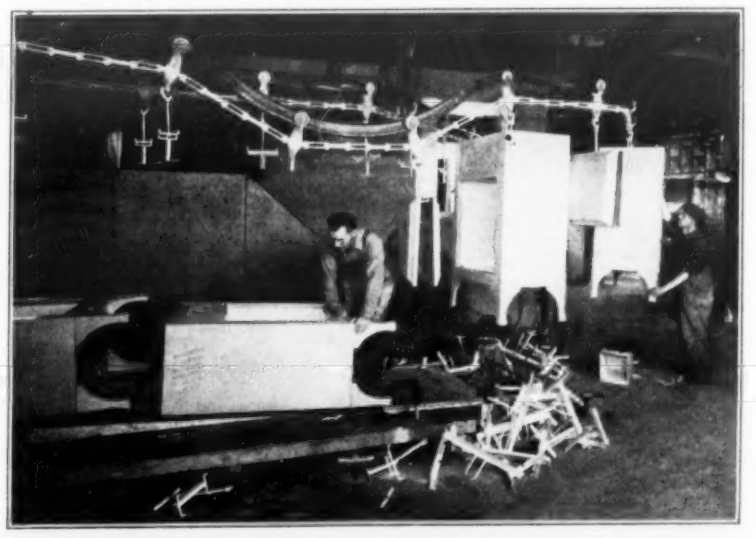
GRAND RAPIDS, Mich.—Three new refrigerator locks, with hinges to match, are being introduced by the Grand Rapids Brass Co. here, manufacturer of refrigerator hardware. The new hardware is designed in modernistic style, and is offered in satin finish, bright chrome, or a combination two-tone effect of both finishes. The handle is available in either bakelite or metal.

In addition to this new standard line, designers of the company are also busy working on exclusive designs for large manufacturers of household electric refrigerators, according to C. E. Goodrich, advertising manager.

## *Ebco Cabinet Line*

Buckeye cabinets being made on the production line of the D. A. Ebinger Mfg. Co., Columbus, Ohio.

## *Hardware Next*



Ebinger workman sanding off rough spots in the finish of a Buckeye cabinet for Domestic Industries, Inc.

# JARECKI BRINGS OUT EVAPORATOR SHELLS

*(Concluded from Page 1, Column 1)*

appearance to the shells (with fins extending around them), but contain a closed chamber for evaporating the refrigerant used in the system. They also have a door to close the ice cube compartment.

**Frost Formation Reduced**

The designers claim that because of the closed construction and greater cooling area of the Dry-Less shells and evaporators, the same freezing time can be secured with the refrigerating machine operating at higher back pressures. They also claim that by reducing the formation of frost, current consumption of the machine is reduced by the amount of refrigeration used to manufacture the frost accumulation.

According to present plans, the shells will be marketed through refrigerator dealers and distributors, while the evaporators will be sold to manufacturers of complete refrigerators.

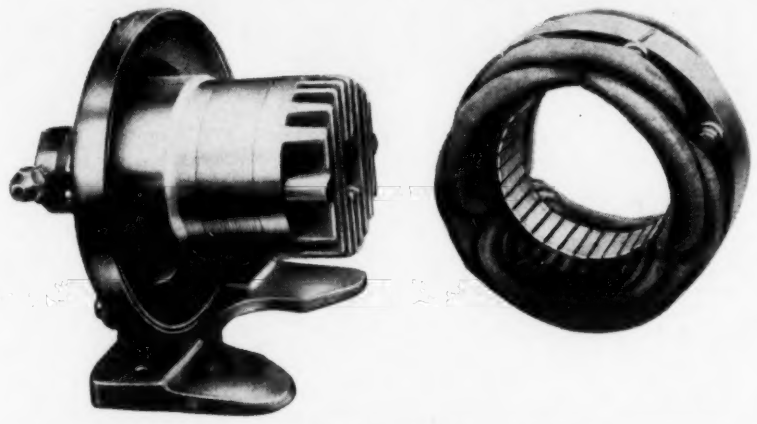
## PENN SWITCH, WILLIAMS MEN TOUR COUNTRY TOGETHER

DES MOINES, Iowa—Nelson Delevan, sales manager of the Penn Electric Switch Co., manufacturer of Penn controls for refrigeration, air compressors, pumps, etc., has just returned from an extended tour of the United States.

R. D. Marshall, representative of the president of the Williams Oil-O-Matic Heating Corp., and Earl Nesbitt, chief engineer for Williams, accompanied Delevan.

Marshall and Nesbitt have been conducting dealer schools at which Delevan presented the Penn story, Penn controls being used on Williams Oil-O-Matic automatic installations.

## *New Italian Compressor*



Parts of a new Italian refrigerating machine which, according to reports, is being displayed at the Milan Fair by the Bazzi Co., Italian manufacturer of the Audiffren-Singren machine. The compressor shown above is a development of Carlo Zorzi, and uses neither seals nor valves.

## CENTURY ELECTRIC ADDS NEW SPLIT-PHASE MOTORS

ST. LOUIS—Century Electric Co. here has added new ratings to its line of split-phase motors. This line is now built in ratings from 1/60 to ½ hp.

The end brackets of these motors are cast from close-grained grey cast iron and are designed to protect the motors from falling objects, dust, or dripping water. The frames are of rolled steel construction.

The bearings are machined from phosphor bronze castings and are thick walled. The Century "wool yarn" system of lubrication gives at least one year's continuous 24-hour-per-day operation without reoiling, its designers claim.

## *Refrigeration Talks On Safety Program*

*(Concluded from Page 1, Column 2)*

Engine Room" by A. J. Authenrieth, supervisor of ice and water utilities for the Middle West Utilities Co., Chicago, and a demonstration by O. H. Day of the Kansas City Public Schools on "Safety Instruction by the Conference Method."

Another speaker of interest in refrigeration is F. W. Rabe, assistant chief engineer of Anheuser-Busch, Inc., St. Louis, who will discuss "Refrigerating Apparatus—Its Safe Use and Proper Maintenance" before the Food Section of the convention, Wednesday morning, Oct. 5.

# MEYER DESIGNS NEW REFRIGERATED TRUCK

*(Concluded from Page 1, Column 4)*

in carrying empty ice cream containers. It is lined with rust-proof metal sheets and is furnished with a drain for flushing.

The mechanical equipment, weighing 500 lbs., consists of a double cylinder compressor, driven by an a.c. electric motor which operates on 220-volt or 110-volt current. This motor is plugged into an electrical outlet to drive the compressor for cooling the body at night. Motor is thermostatically controlled.

En route, the compressor is driven by a gas engine, equipped with a Delco-lite starting system. The system is thermostatically controlled when the truck is on the road.

When the compressor is being driven by the electric motor, the pulley of the gas engine runs free, as it is equipped with an over-running automatic clutch. Current for starting the gas engine is taken from the car's storage battery.

The evaporator is suspended from the ceiling and is of the fin type. It is equipped with thermostatic expansion valves which open and shut as the temperature in the truck is raised or lowered. Evaporator is composed of vertical aluminum plates placed along horizontal copper tubes, tinned outside.

Thermostat controls on both engine and electric motor are set for a range of 4° zero F. when the unit shuts down, to 5° above zero F. when the unit starts. Temperatures of -10° F. have been secured in these bodies, according to the manufacturer.

## PROFESSIONAL ENGINEERING COUNCIL BEING ORGANIZED

NEW YORK CITY—An Engineers' Council for Professional Development has been established here. Its purpose, according to officials, is to promote higher professional standards of education and practice in engineering, to bring about greater solidarity of the profession and to make the engineer more effective in dealing with technical, social and economic progress.

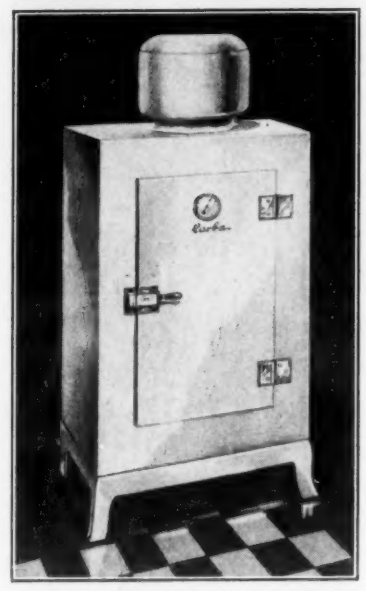
Organization of the council is the result of meetings in the past several months of representatives of seven professional engineering organizations. An immediate objective is to set up procedure and qualifications by which the progress of the engineer toward professional standing can be recognized.

The plan comprehends a more or less automatic certification of the engineer in terms of at least minimum professional standards. The working out of it is expected to take time, as it is formulated by the new body.

Five of the seven engineering societies have ratified the new agency. They are the national societies of civil, electrical, mechanical and chemical engineers, and the Society for the Promotion of Engineering Education.

The American Institute of Mining and Metallurgical Engineers and the National Council of State Boards of Engineering Examiners, which have participated in the framing of the plan, are expected to take favorable action before October.

## *Solid CO-2*



# INTERNATIONAL CARBONIC ANNOUNCES SOLID CO-2 BOX

*(Concluded from Page 1, Column 5)*

sealed metal plate which cools the cabinet by conduction. The control is a retarding system, details of which have not been announced. A temperature gauge in the door of the refrigerator indicates inside temperatures.

The unit requires servicing but once a week, Mr. Scarlett declares, consuming about 20 lbs. of solid carbon dioxide per week. A full charge of 24 lbs. will last from eight to ten days, but the servicing company usually charges the refrigerator every week.

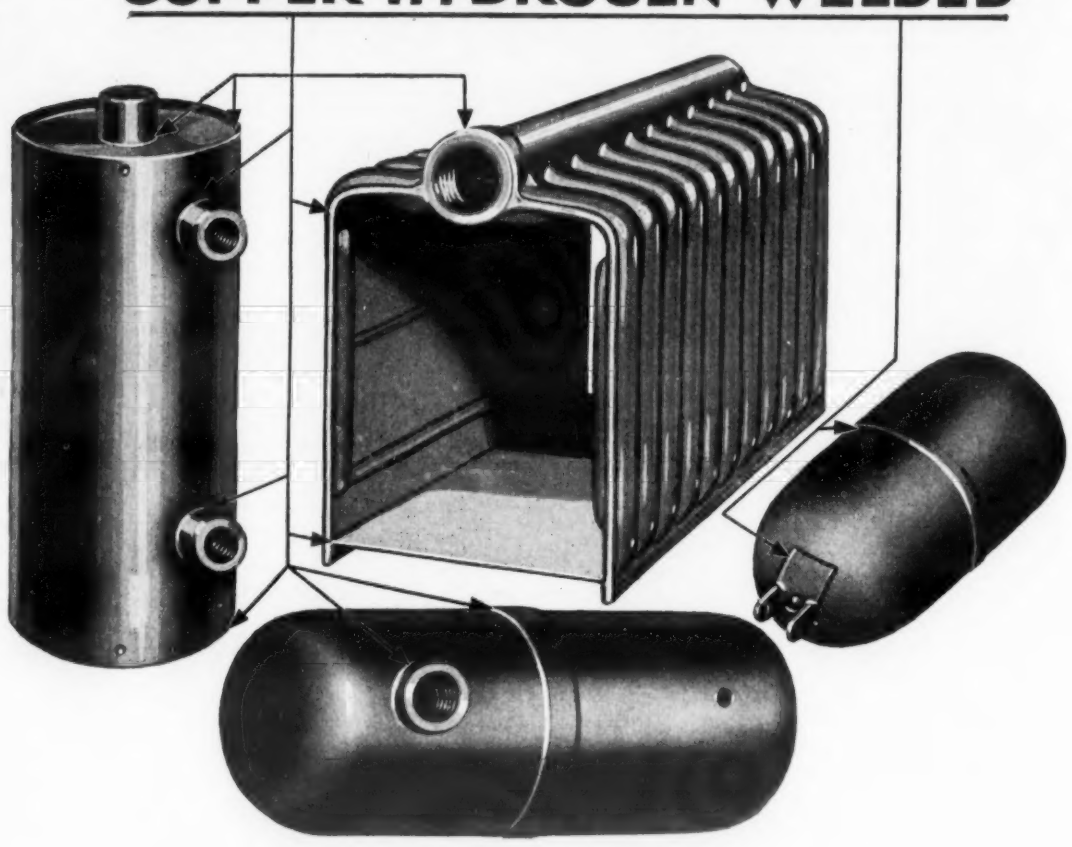
The refrigerator can be adjusted to hold low temperatures for frozen foods, ice cream, etc., as well as producing normal temperatures. An approximation of its price in the American market can be made from the fact that European models are sold from $40 to $90.

## NORGE TEST COMPRESSOR COMPLETES 6-YEAR RUN

DETROIT—In August the Norge "marathon rollator" completed its sixth year of operation, according to Major Howard E. Blood, president of Norge Corp. Major Blood estimates that the length of time that this unit has been running is equivalent to 21 years of use in the home.

In order to determine how many years the rollator mechanism would last, in August, 1926, Norge engineers set up a testing device which consisted of a regular rollator compressor with a freezing unit which was completely exposed to the open air of a heated room. This unit has run constantly, day and night, ever since, except for yearly inspections of 24 hours each. These inspections include tearing down the rollator, checking each part and reassembling it.


COPPER HYDROGEN WELDED



An advanced process for welding a number of steel parts at one operation

Copper Hydrogen Electric Welding is a revolutionary process for welding steel parts. Through this process we can handle intricate assemblies that require a number of welds—all welds being accomplished at one operation.

Above is illustrated a few of the important refrigerator parts—evaporators, tanks, and floats—which have been Copper Hydrogen Electrically Welded for the refrigerating industry. Welding is effected with pure copper at all points of contact.

Copper Hydrogen Electric Welding means longer life for your product—permanent strength at all joints—gas tightness, and, because produced in a reducing atmosphere, you get a clean, scale-free surface.

Every electric refrigerator manufacturer should investigate the many merits of Copper Hydrogen Electric Welding. It improves your product. It saves you money.

Write for complete details today.

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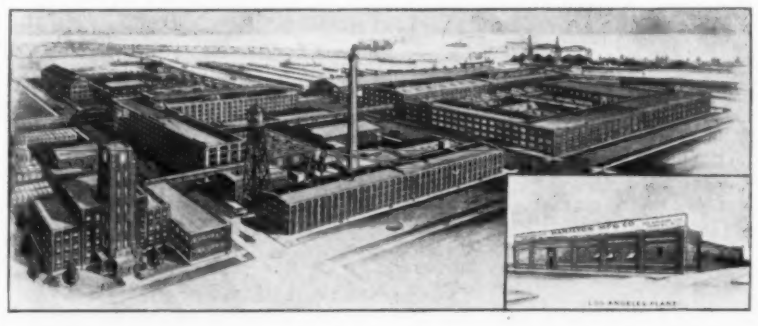
INCREASE YOUR SALES

*with* HAMILTON CABINETS

The fine appearance of a Hamilton Cabinet will help to sell your refrigerators. We specialize in the highest quality workmanship at moderate prices. For over fifty years we have been satisfying the most exacting requirements in cabinet manufacture, in wood or steel.

Our plant contains over 750,000 square feet of floor space, scientifically arranged for efficient, rapid mass production. Being centrally located, geographically, railroad facilities are such that freight rates to all parts of the country are low. Our factory is fully equipped with modern, labor-saving machinery which enables us to produce refrigerator cabinets of high quality at low cost.

Ask us to quote on your cabinet requirements.



HAMILTON MFG. CO.

TWO RIVERS, WIS.

# Stainless Steel Can Be Spot Welded With Careful Control of Machine

By V. W. Whitmer
Metallurgist, Republic Steel Corp.

STAINLESS steels are well adapted to spot welding due to their clean surface, freedom from any oxide or scale, and because of the absence of any coating such as zinc or lead, as on galvanized or Terne Plate stock.

Spot welding, in principle, is nothing more than holding two sheets in close contact between two copper electrodes about an inch or so in diameter with the contact ends tapered to about ⅛ in. in diameter, and passing a current low in voltage but high in amperage through the circuit for a short period. Fusion immediately takes place between the two sheets, while the excess heat is rapidly carried away from the outside surfaces by the water-cooled electrodes.

### Low Voltage Used

The low voltage, about 2 to 4 volts, is obtained from a step-down transformer wound in sections, each being connected with a stop on a rotary control switch by which the current or heat can be increased or decreased by turning up or down respectively.

While the total heat applied will be determined by the rotary adjustment, the area of the electrode points should be maintained as nearly constant as possible.

Any increase in area will tend to reduce the heat per unit area, resulting in an improperly or poorly fused joint. A decrease in area will increase the unit heat and will usually burn a hole entirely or partly through the sheet to be welded, other factors remaining constant.

### Pressure of Electrodes

The pressure exerted by the electrodes is generally produced by the compression of helical springs and can be adjusted by a lock nut on a shaft through the center of the spring.

Variable pressures will also affect the quality of the weld. Too much pressure will reduce the resistance of the joint and hence tend to decrease the heat generated. The pressure generally determines the amount of up-set displacement directly following the fusing period, producing an indentation on each side of the sheets welded.

In addition to these variables, the time of current flow is of great importance. Too long a period gives the same result as too much heat. Too short a contact will produce no weld.

It is evident, therefore, that spot welding depends on the following four variables:

1. Current (controlled by rotary switch).
2. Diameter of electrode contact points.
3. Pressure (controlled by spring or pneumatic pressure).
4. Length of time the current is allowed to flow.

While it would not be impossible to determine an adjustment of each of these with respect to the other for each gauge to be welded, as in the case of automatic machines where time and pressure are accurately controlled by motor-driven cams and the current set by hand, it would be next to impossible to determine same for manual operation, due to the personal element.

Furthermore, such adjustment would be necessary for each individual machine. This makes it impossible to set up any specific procedure to follow for this class of work. However, stainless steel, such as Enduro, in general will require less heat than the same gauge in common steel, due to its lower heat conductivity (tending to concentrate it in one spot), its lower melting point and better contact due to a scale-free surface.

### Training Spot Welders

Consequently, if an operator is producing good work on say 20-gauge black steel, he could, in general, change to the same gauge stainless by either dropping the switch one point or reducing the time slightly, or both.

More definite instructions cannot be given but the exact procedure must be worked out individually, balancing one variable against the other until the desired result is obtained.

If both electrodes are of the same diameter, a depression will occur on both sides which, while not serious on the pickle finishes, may be objectionable on the polished surfaces.

This can be reduced by using a copper block about ½ in. thick and 2 in. square between the electrode and polished side, thus putting the major depression on the lower side. A ⅛-in. to ¼-in. aluminum block works even better, but due to its lower melting point, will tend to pit if a slight arc is drawn.

### Polishing Welds

This procedure will reduce the depression but will not eliminate it entirely, as it is due to shrinkage of the molten metal in the center and, hence, pulls from both surfaces. The indentation remaining, if the work is to be polished, will have to be ground out with a cotton wheel set up with glue and abrasive. Use about 80 grit or finer.

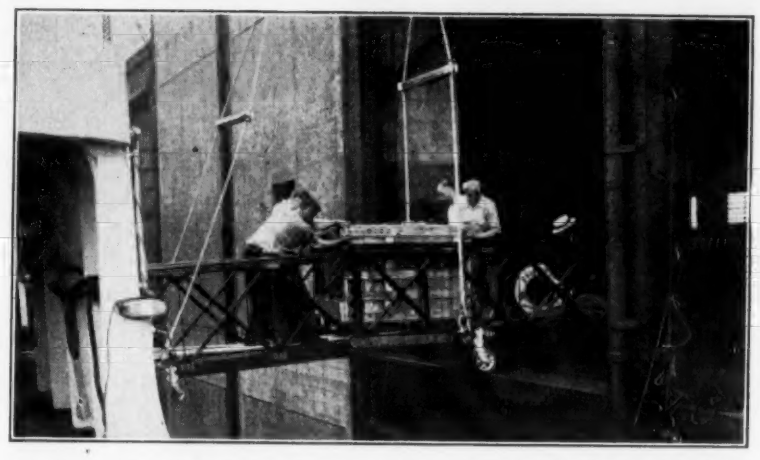
When welding polished stainless steel, it is advisable to place the welds at the least conspicuous positions, as often it is difficult to refinish the welds and have the same color if the whole piece is not refinished. This depends, however, to a great extent, upon the finish of the sheets.

### Avoiding Tarnation

Spot welding, like any other type of welding requiring high temperature, will form an oxide on the surface which will be blue in color. If this is exposed to the weather or moist conditions, it will slowly change to a brown color resembling rust.

This, however, is only a surface condition, affecting the original oxide only. If such welds are to be exposed to the atmosphere, they should be cleaned either with acid as in pickling in the case of No. 1 finish sheet, or ground and polished if No. 4 or higher finishes are employed. In the ground and polished state, spot welds are just as resistant to the salt spray as the original metal.

# *All Aboard for Honolulu*



To start its ocean voyage around the world, Frigidaire's 2,250,000th refrigerator was placed aboard the "President Pierce" at San Francisco.

# *Underwood Directs G.E. Plant*

SCHENECTADY, N. Y.—Louis E. Underwood, managing engineer of the stationary motor engineering department of the General Electric Co. at Lynn, Mass., has been appointed manager of the Pittsfield, Mass., works of the company to succeed E. A. Wagner, who has retired, according to an announcement recently by W. R. Burrows, vice president in charge of manufacturing.

Underwood joined the General Electric organization in 1897. In 1899 he entered the stationary motor engineering department, was made chief engineer of the department in 1915, and managing engineer of the consolidated motor department in 1927.

# NATIONAL ELECTRICAL CODE TO BE REVISED FOR 1933

NEW YORK CITY—The next edition of the National Electrical Code will be issued in 1933 according to A. R. Small, chairman of the electrical committee of the National Fire Protection Association.

It is expected, according to Small, to have the reports of most of the article committees ready for publication in December, 1932, so that they can be studied prior to the meeting of the electrical committee soon after March 15, 1933.

He points out that persons or organizations desiring to have changes in the code considered should present them to the proper article committee before Oct. 1.

# 'HOUSE OF PORCELAIN' NEARLY COMPLETED

CLEVELAND — The world's first porcelain enamel house, built with a steel frame and an exterior of steel-enamel shingles, is rapidly nearing completion here. The use of steel enamel for the exterior was the idea of Robert Weaver, president of the Ferro Enamel Corp., of this city, which evolved the shingles.

After the steel frame was erected on the foundation, the entire house was enclosed in metal sides with insulation between. To this the porcelain enamel shingles are attached just as wood shingles are put on.

Further insulation is provided by four inches of mineral wool about the frame and between the new product and the plaster board, which forms the base of the finish plaster. This board is used for walls, while metal lath is being used for ceilings.

Shingles for the main walls of the house and the garage, which is attached, are the shade of buff sandstone. About the base for approximately three feet and at the top, beneath the coping, a shade of green is used for relief. The roof shingles are three shades of brown.

This house has some of the features of the skyscraper, including its downspouts, which are carried inside the building. It is Georgian in design, with parapet about the roof. Atop the garage and easily reached from the stair landing, a veranda for the family has been built, with arrangements so that it can be screened in summer and glassed in winter.

Floors are laid on junior steel beams. Porcelain tile will be used for walls of kitchen, lavatories, bath and basement recreation room.

The objective has been to produce a fire-safe house, constructed of materials so permanent that maintenance costs can be kept at the minimum.

# SERVICE FIRM ORGANIZED BY SOUTHERN OHIO MEN

PORTSMOUTH, Ohio—A new concern known as the Mechanical Refrigeration Service Co., carrying a line of replacement parts, belts and refrigerants for Kelvinator, Frigidaire, Copeland, Trupar, Norge and Welsbach units has been organized here by E. L. Minch, former Frigidaire and Kelvinator service man in southern Ohio.

The new company specializes in handling service for dealers of various makes of refrigerators, and gives service within a 100-mile radius of Portsmouth. It likewise maintains a repair shop where units and parts can be overhauled and rebuilt.

Minch was in the employ of Frigidaire from 1923 to 1928 and with Kelvinator from 1928 to 1932. He also has had factory training on Copeland and Trupar.

M. L. Sleiner, formerly of the Welsbach Co., and Wm. Journey of Kelvinator are service men for the new company.

# AIR-CONDITIONING MANUAL ISSUED BY ASSOCIATION

SAN FRANCISCO—To put the sales staff on a par with the engineering departments of the utilities with comprehensive data about air conditioning, the general power bureau of Pacific Coast Electrical Association has recently issued an air-conditioning manual of 114 pages.

Describing briefly the requisite apparatus for the various systems, it follows with an analysis of the functions which air conditioning can perform for special industries, retail establishments, offices, commercial places, homes, etc. Typical installations are illustrated.

# *General Electric Designs Splash-Proof Motors*

SCHENECTADY, N. Y.—A new line of splash-proof induction motors has been announced by the General Electric Co. These motors are designed particularly for application in which open-motor operation is handicapped by the presence of splashing or dripping liquids.

The end shields are of special construction, the top half being solid to exclude dripping water and liquids. Cooling air enters through ventilating openings in the bottom half of the end shields, a special baffle, which extends to the center line of the motor shaft, preventing the entrance of splashing water into the windings.

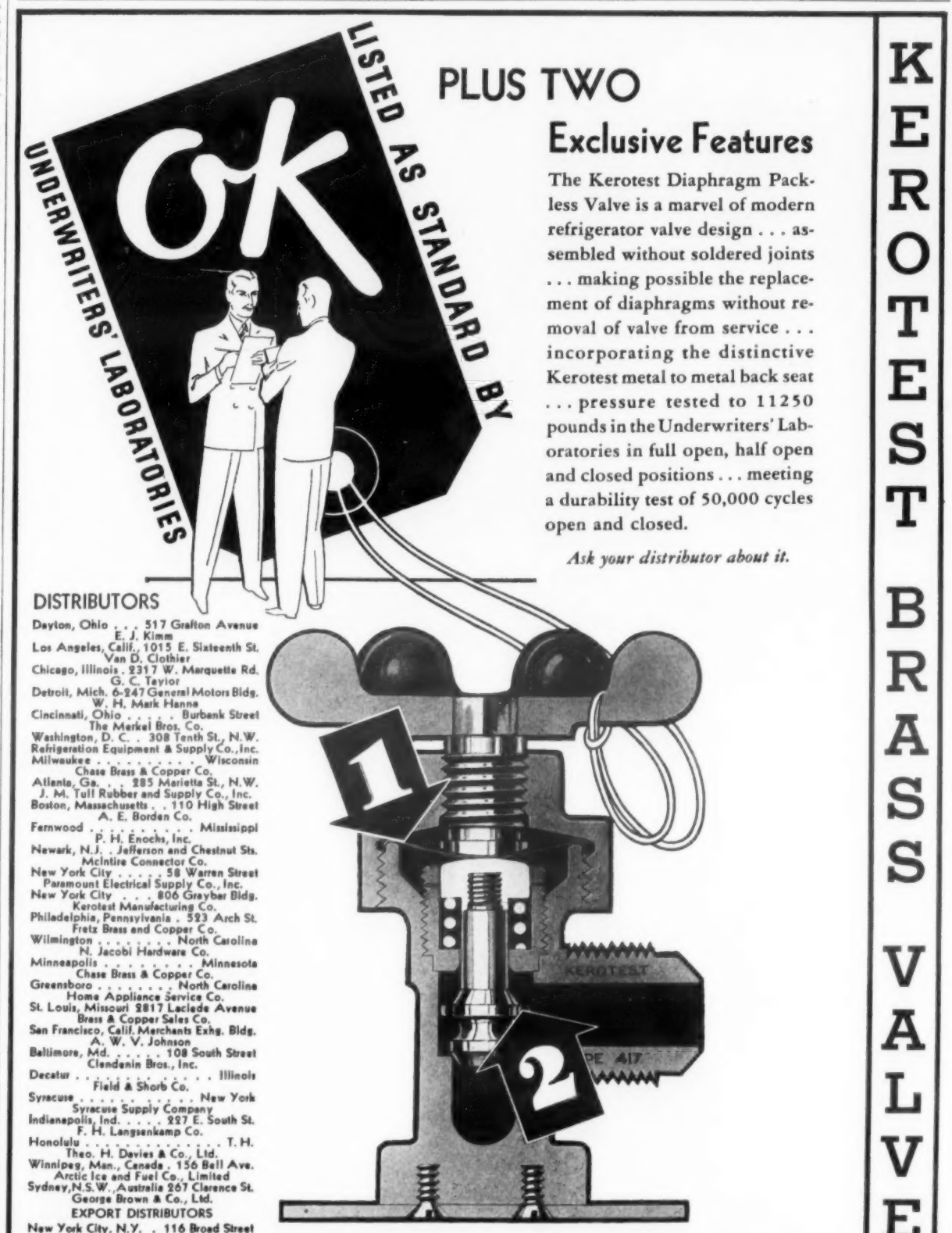
The motor frame is protected against the entrance of dripping water and liquids by a one-piece cover, which is fitted to the motor frame. The ventilating air, which enters through the end shield openings, is circulated over the end windings, across the motor frame, and out through louvers in the protective cover.

A water-tight conduit box protects the motor leads against damage by dripping or splashing water.

Locations in which these splash-proof motors may be used include dairy plants, meat-packing plants, laundries, food and process industries, the announcement claims.

# CINCINNATI BUYS 2 NORGES FOR WATER COOLING

CINCINNATI—The City of Cincinnati recently bought two Norge model H refrigerators for use in the water works department. These are being used to keep water at the proper temperature prior to analysis for bacteria count. The sale was made by the Cincinnati Refrigeration Co.



OK
LISTED AS STANDARD BY
UNDERWRITERS' LABORATORIES
PLUS TWO
Exclusive Features
The Kerotest Diaphragm Packless Valve is a marvel of modern refrigerator valve design . . . assembled without soldered joints . . . making possible the replacement of diaphragms without removal of valve from service . . . incorporating the distinctive Kerotest metal to metal back seat . . . pressure tested to 11250 pounds in the Underwriters' Laboratories in full open, half open and closed positions . . . meeting a durability test of 50,000 cycles open and closed.
Ask your distributor about it.
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Washington, D. C. . 308 Tenth St., N.W. Refrigeration Equipment & Supply Co., Inc.
Milwaukee . . . . . Wisconsin Chase Brass & Copper Co.
Atlanta, Ga. . . 285 Marietta St., N.W. J. M. Tull Rubber and Supply Co., Inc.
Boston, Massachusetts . . 110 High Street A. E. Borden Co.
Fernwood . . . . . Mississippi P. H. Enochs, Inc.
Newark, N.J. . Jefferson and Chestnut Sts. McIntire Connector Co.
New York City . . . . . 58 Warren Street Paramount Electrical Supply Co., Inc.
New York City . . . 806 Grayber Bldg. Kerotest Manufacturing Co.
Philadelphia, Pennsylvania . 523 Arch St. Fretz Brass and Copper Co.
Wilmington . . . . . North Carolina N. Jacobi Hardware Co.
Minneapolis . . . . . Minnesota Chase Brass & Copper Co.
Greensboro . . . . . North Carolina Home Appliance Service Co.
St. Louis, Missouri 2817 Laclede Avenue Brass & Copper Sales Co.
San Francisco, Calif. Merchants Exhg. Bldg. A. W. V. Johnson
Baltimore, Md. . . . . 108 South Street Clendenin Bros., Inc.
Decatur . . . . . Illinois Field & Shorb Co.
Syracuse . . . . . New York Syracuse Supply Company
Indianapolis, Ind. . . . . 227 E. South St. F. H. Langsenkamp Co.
Honolulu . . . . . T. H. Theo. H. Davies & Co., Ltd.
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Sydney, N.S.W., Australia 267 Clarence St. George Brown & Co., Ltd.
EXPORT DISTRIBUTORS
New York City, N.Y. . 116 Broad Street Melchior, Armstrong, Dessau Co., Inc.
1
2
KEROTEST
KEROTEST
KEROTEST MANUFACTURING CO.
PITTSBURGH, PENNA.
KEROTEST BRASS VALVES

# Ammonia Played Active Role in Growth Of Refrigeration; Properties Given

By R. J. Quinn*
Assistant Sales Manager, The Mathieson Alkali Works

HISTORICALLY, the commercial manufacture and use of ammonia, and especially of anhydrous ammonia, are so closely related to the development of the science of refrigeration, that they are practically inseparable. Ammonia was first described by Priestley in 1774. In 1823 Faraday succeeded in condensing ammonia gas to a liquid by applying pressure and then cooling it. This discovery proved of the greatest importance and is practically the basis for the use of anhydrous ammonia as a refrigerant.

From 1755 to 1834 many refrigerating experiments were performed and many experimental machines were constructed, but very little real progress was made. William Cullen, Jacob Perkins, A. C. Twining, John Gorrie, and Ferdinand Carre were important contributors during the pioneer stage of development.

In the years of 1873-75 the first successful ammonia compression machines were introduced by C. P. G. Linde of Germany and David Boyle of the United States. Until 1890, however, the practical utilization and commercial application of refrigeration were quite limited, and development slowed up.

During 1890 an incident occurred which awakened tremendous public interest in the possibilities of mechanical refrigeration — namely, the greatest shortage in the crop of natural ice that had ever been recorded. To this happening may be attributed the impetus that really started the rapid development and utilization of mechanical refrigeration in the United States. By a peculiar coincidence, the winter of 1931-32 was particularly mild and has produced the greatest shortage of natural ice harvested since 1890.

Through this period of development of refrigeration equipment and technic, the manufacture of anhydrous ammonia has kept actively apace so that at the present time between 20,000,000 and 30,000,000 lbs. are used annually in the United States for this purpose.

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### Properties

Ammonia is a compound gas composed of nitrogen and hydrogen in the proportion of 1 part of nitrogen to 3 parts of hydrogen by volume, or 14 parts of nitrogen and 3 parts of hydrogen by weight, and is represented by the symbol $NH_3$.

Ammonia gas is colorless and possesses a sharp pungent odor and alkaline taste. By pressure and cooling, it can be condensed to a colorless, mobile, and strongly refringent liquid of specific gravity 0.6382 at 32° F., which boils at —28° F. at atmospheric pressure and solidifies to a white crystalline mass at —107.86° F.

### Inflammability and Explosibility

From time to time attention has been directed to fires or explosions in refrigerating rooms in which serious leakage of ammonia has taken place. Numerous investigations by private and official organizations have developed fairly complete and consistent data regarding the explosive limits of ammonia-air mixtures and regarding the combustion of ammonia. From 13.1 to 26.77 per cent of ammonia in mixtures with air appear to be the explosive limits of these mixtures.

Although many textbooks state that ammonia will not burn, there are certain conditions under which flame may be supported. Under these conditions a yellow flame is produced, but it is difficult to distinguish between inflammability and explosibility.

### Stability

For all practical purposes, ammonia is stable when exposed to pressure temperature and contact conditions that are ordinarily met with in the normal operation of an ammonia compressor. When abnormal conditions prevail, there is some dissociation of ammonia into its component gases.

The presence of hydrogen gas in a compression system which has previously been free from it, indicates that some decomposition is taking place and that the machine is not being operated properly.

### Corrosion

Ammonia is a strong alkali and will react as such when various textile, food, fabric, or fur products are exposed to it. It is very soluble in water. It is not corrosive to iron or steel, but readily attacks copper, brass, zinc, aluminum, and many alloys, especially those containing copper. They should consequently be avoided in the construction of equipment which may become exposed to ammonia fumes or solutions.

### Standard Ton Data

The commercial unit of refrigeration is the quantity of heat required to melt 1 ton (2,000 lbs.) of pure solid ice into water at 32° F. Since 1 lb. of ice will absorb 144 B.t.u. at 32° F. in melting, 1 ton will absorb 2,000 × 144 or 288,000 B.t.u. Therefore 1 standard commercial ton of refrigeration is the removal of 288,000 B.t.u. The rate of performance is 1 day of 24 hours.

The latent heat of evaporation of anhydrous ammonia is higher than that of any other commonly used refrigerants. It is therefore more efficient from the standpoint of quantity required to perform a given amount of refrigeration.

Other physical properties, however, must be considered, such as cubic feet of piston displacement of compressor per ton and horsepower input per ton of refrigeration. Table I taken from H. J. Macintire's "Principles of Mechanical Refrigeration" shows very clearly the common properties of several refrigerants.

### Toxicity

Ammonia is not poisonous. It is a powerful irritant upon the mucous membranes of the eyes, nose, throat, and lungs. Because of its extreme solubility in water, it also irritates any skin surface where an accumulation of moisture or perspiration takes place.

The physiological effect of ammonia is not cumulative, and workmen may develop a certain degree of immunity or tolerance toward exposure to ammonia in low concentrations.

An atmosphere containing five volumes per thousand appears to be the maximum that may be inhaled without serious consequence, and inasmuch as an atmosphere containing one-twentieth volume per thousand imparts a strong odor to air, adequate warning is provided of conditions which may become dangerous.

Ammonia acts as a powerful heart stimulant, both when inhaled in low concentrations and when taken internally in small doses. When anhydrous ammonia comes in contact with the skin it causes a condition similar to frostbite or a burn, and the affected part responds to the usual treatments for such afflictions. Because of its odor and its characteristic chemical reactions, leaks in an ammonia system may be readily detected.

### Ranges of Application

Anhydrous ammonia may be employed as a refrigerant under an extremely wide range of conditions. It is used in household mechanical refrigerators which contain approximately 2 pounds of refrigerant. It is used in commercial units ranging up to 500 tons of refrigeration per day, charged with 70,000 pounds of anhydrous ammonia.

A wide variation of temperature may also be covered, ranging from atmospheric down to —60° F. in the case of some recently developed multiple-stage units used in quick-freeze processes for the treatment of food products.

The pressures encountered in the normal operation of ammonia compression machines are not excessive. They depend upon the quantity and temperature of condenser water used and rarely exceed 250 lbs. per sq. in. Ammonia fittings, piping, gages, etc., are highly standardized and are well known to the trade.

The lubrication of any refrigerating machine is an important factor in its operation. When ammonia is used, the lubricant must be especially adaptable for low-temperature work. Considerable care and judgment must be used in the selection of lubricants, and definite specifications are essential to the standardization and control of the lubricants used.

### Shipping Containers and Transportation

Anhydrous ammonia is generally shipped in cylinders containing 50, 100, or 150 lbs. Some cylinders of 25 and even 10 lbs. capacity are available. When a large amount is used at a central location, it may be shipped in single-unit class V tank cars containing 50,000 lbs. It is estimated that there are in service in the United States 275,000 cylinders of assorted sizes and 250 of the single-unit tank cars. Because of the low density of anhydrous ammonia, it has not been practical to ship it in multi-unit tank cars.

All shipping containers should be designed, manufactured, and maintained in accordance with Interstate Commerce Commission regulations. The Bureau of Explosives has prepared and issued specifications for containers to comply with Interstate Commerce Commission regulations.

Anhydrous ammonia may be shipped in cylinders meeting Specifications ICC-4, ICC-3, ICC-3A480, or ICC-4A480. In actual practice, however, Specification ICC-4 has been found most suitable, and the industry has accepted this type of cylinder as standard.

All cylinders of anhydrous ammonia shipped by freight must be properly identified with the Interstate Commerce Commission green label.

Another important regulation is that the cylinders may be filled to only 54 per cent of the water capacity of the cylinder. This prevents overloading and allows sufficient space for any expansion of the liquid which might occur.

### Availability

The available potential supply of anhydrous ammonia is almost unlimited. There is always available a large amount of material which is a by-product of coking or gas-producing operations. There is also a rapidly growing industry producing ammonia synthetically.

There are now operating in the United States nine synthetic ammonia plants capable of producing 350,000,000 lbs. of ammonia per year, which is far in excess of the refrigerating industry's needs.

### Selling Prices

Anhydrous ammonia is generally sold on a delivered price basis, including freight charges for full and empty cylinders. The price will, therefore, vary depending on the distance of the consumer from producing points.

The average tare weight of a 100-lb. cylinder is 170 lbs., so that in the delivery of 100 lbs. of anhydrous ammonia, freight charges must be paid on a gross weight of 270 lbs. for the full cylinder, and 170 lbs. for the empty cylinder, or 440 lbs. in all. Freight rates, and particularly changes in freight rates, have an important influence on anhydrous ammonia prices.

The price of anhydrous ammonia has varied over a rather wide range in the last ten years. Table II shows the prices that have prevailed at six typical consuming points.

### Specifications

Anhydrous ammonia is one of the purest chemical products that is sold today as a commercial specialty. As a result of highly competitive methods of selling this material, quality has been developed to a very unusual standard, and the American product is superior to that found anywhere else in the world.

Anhydrous ammonia may be purchased against very exacting specifications. An example of the improvement that has been made in the quality of the product is shown in the following comparison of specifications.

Specification I represents the chemical requirements of U. S. Navy Department Specification 51A5a dated November 1, 1919, and Specification 2 represents the requirements that are written into all of its contracts by one of the prominent manufacturers:

SPECIFICATION 1

Anhydrous ammonia shall conform to the following requirements:

(a) Noncondensable gas. The gas drawn from the top of the cylinder on the first opening shall contain less than 40 cc. of noncondensable gas per 100 grams of ammonia.

(b) Residue. The residue after free evaporation of 100 cc. of liquid ammonia, with due precaution to exclude moisture and to prevent contamination of sample in drawing, shall be less than 0.04 per cent.

(c) Impurities. Anhydrous ammonia shall contain no objectionable impurities, such as pyridine, acetonitrile, naphthalene, hydrogen sulfide, organic acid or other organic compounds, in amounts which can be determined by other than the most accurate laboratory methods. Aromatic amines, estimated as pyridine, shall not exceed 0.001 per cent; and organic acid, estimated as acetic acid shall not exceed 0.005 per cent.

SPECIFICATION 2

Anhydrous ammonia shall conform to the following chemical requirements:

(a) Noncondensable gas. The gas drawn from the top of the cylinder on the first opening shall contain less than 20 cc. of noncondensable gas per 100 grams of ammonia.

(b) Residue. The residue after free evaporation of 100 cc. of liquid ammonia, with due precaution to exclude moisture and to prevent contamination of sample in drawing, shall be less than 0.02 per cent.

(c) Impurities. Anhydrous ammonia shall contain no objectionable impurities, such as pyridine, acetonitrile, naphthalene, hydrogen sulfide, organic acid, or other organic compounds.

### Air in Anhydrous Ammonia

The air content of the ammonia in a compression system has an important influence on the power consumption. The air or noncondensable gas reduces the capacity of the condenser, with a corresponding increase in condenser pressure and power consumption. Calculations show that the introduction of 5 per cent of air in an ammonia compression system reduces the coefficient of performance by the surprising figure of 22.3 per cent (Table III).

There is no excuse for the presence of excessive amounts of noncondensable gas in an ammonia system, as there are on the market several very satisfactory "air separators" which at a very nominal cost eliminate these objectionable gases.

## *Comparative Data on Refrigerants; Price Trends of Ammonia*

TABLE I—COMPARISON OF REFRIGERANTS

| Refrigerant | Thermal Potential Saturated Vapor at 5° F. B.t.u. | Thermal Potential Liquid at 86° F. B.t.u. | Net Refrigeration per Lb. of Refrigerant B.t.u | Sp. Vol. of Satd. Vapor at 5° F. Cu. ft. | Piston Displacement per Ton per Minute Cu. ft. | Pressure At 5° F. Lb./sq. in. abs. | Pressure At 86° F. Lb./sq. in. abs. | Piston Displacement per Ton per Minute With That for $CO_2$ Taken as Unity Cu. ft. |
|---|---|---|---|---|---|---|---|---|
| Ammonia ($NH_3$) | 613.3 | 138.8 | 474.4 | 8.15 | 3.44 | 34.3 | 169.3 | 4.3 |
| Carbon dioxide ($CO_2$) | 101.0 | 36.5 | 64.5 | 0.258 | 0.80 | 32.9 | 1045.0 | 1.0 |
| Sulphur dioxide ($SO_2$) | 183.5 | 42.1 | 141.4 | 6.42 | 9.08 | 11.8 | 66.45 | 11.34 |
| Ethyl chloride ($C_2H_5Cl$) | 163.5 | 21.0 | 142.5 | 16.18 | 22.7 | 4.5 | 27.4 | 28.35 |
| Methyl chloride ($CH_3Cl$) | 171.1 | 27.7 | 143.3 | 4.65 | 6.49 | 21.0 | 95.5 | 8.11 |
| Butane ($C_4H_{11}$) | 165.4 | 16.0 | 149.4 | 10.0 | 13.4 | 11.0 | 42.9 | 16.75 |
| Propane ($C_3H_8$) | 159.8 | 17.8 | 142.0 | 2.4 | 3.38 | 43.9 | 159.0 | 4.22 |

TABLE II—COMPARATIVE PRICES OF ANHYDROUS AMMONIA, 1924 TO 1932, INCLUSIVE

| City | 8-1-24 | 10-17-27 | 6-9-28 | 11-15-28 | 2-4-29 | 4-15-29 | 11-27-29 | 12-1-30 | 12-1-31 |
|---|---|---|---|---|---|---|---|---|---|
| Atlanta | $35.00 | $17.50 | $18.00 | $18.00 | $18.50 | $19.00 | $19.00 | $19.00 | $19.00 |
| Boston | 31.00 | 13.50 | 13.50 | 13.50 | 14.00 | 14.00 | 14.00 | 14.00 | 14.00 |
| Chicago | 30.00 | 14.50 | 14.50 | 15.00 | 15.50 | 15.50 | 15.50 | 15.50 | 15.50 |
| New York | 30.00 | 13.50 | 13.50 | 13.50 | 14.00 | 14.00 | 14.00 | 14.00 | 14.00 |
| Philadelphia | 30.00 | 13.50 | 13.50 | 13.50 | 14.00 | 14.00 | 14.00 | 14.00 | 14.00 |
| St. Louis | 30.00 | 14.50 | 14.50 | 15.00 | 15.50 | 15.50 | 15.50 | 15.50 | 15.50 |

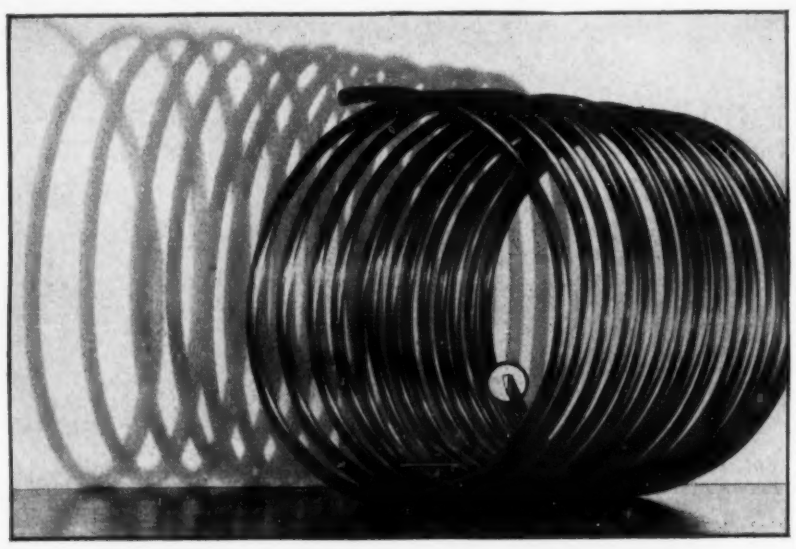
TABLE III—CALCULATED PERFORMANCES FOR MIXTURES OF AIR AND AMMONIA (4)

| Air in Mixture | Compressing Work per lb. Ammonia | Refrigeration per lb. Ammonia | Coefficient of Performance | Increase of Compressing Work | Decrease of Refrigeration | Reduction in Coefficient of Performance |
|---|---|---|---|---|---|---|
| % | B.t.u. | B.t.u. | | B.t.u. | B.t.u. | % |
| 0 | 119.6 | 482 | 4.40 | .. | .. | .. |
| 1 | 120.2 | 473 | 3.94 | 0.6 | 9 | 12.7 |
| 3 | 121.6 | 444.9 | 3.66 | 2.0 | 37 | 16.8 |
| 5 | 122.8 | 420.2 | 3.42 | 3.2 | 62 | 22.3 |

## NEW CELOTEX PRODUCT USED AS CONCRETE FORMS

CHICAGO—Experiments with Celotex Tempered Hard Panel board, new product of the Celotex Co., were conducted here recently, when forms made from the material were used in molding 500 concrete footings for the steel framework of the General Exhibit Bldg. of Chicago's 1933 "A Century of Progress."

Celotex Tempered Hard Panel board is a two-ply laminated board, ¼-in. in thickness. The lamination provides two smooth surfaces.



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Stock sizes are 1/4 in., 3/8 in., 7/16 in., 1/2 in., 5/8 in., and 3/4 in., all in .035 in. gauge. Heavier gauges can be made to order. Stock coils are 25, 50 and 100 feet long. Longer lengths can be supplied at short notice.

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# SURVEYS APPEAL FOR AUTHORIZED SERVICE

NEW YORK CITY—Sixteen different methods employed by leading household appliance manufacturers to induce customers to use authorized service were listed in a survey conducted recently by *Printers' Ink*. These methods are as follows:

(1) Selling parts only to authorized dealers. This method is employed by the Kelvinator Sales Corp. and the May Oil Burner Corp.

(2) Binding dealer to use bona fide parts furnished by the company. The Stromberg-Carlson Telephone Mfg. Co. uses this system.

(3) Enclosing or sealing operating parts. General Electric has long offered its refrigerator with enclosed operating parts and sealed controls and now Servel is building its machine with the same features. (Majestic, Westinghouse, Williams, Clago and U. S. refrigerators all offer hermetically sealed refrigerating units—Editor's Note.)

(4) Using special casting dies, not easily duplicated, for parts. This is the system used by the Hoffman Heater Co.

**Service Man's 'Identification' Card**

(5) Using "Identification" card for service man. G. A. Johnson, service manager of the Delco Appliance Corp., says:

"In the case of Delco-Light plants, we feel that we have made considerable progress by including in instruction books and on the service instruction cards a reference to the 'Serviceman's Identification Card.' These cards are renewed every six months, to avoid their continued use in case of change in official service representation. The color of the card is also changed with each six months' period. It is necessary, of course, to impress on users the importance of official service and to bring the identification card to their attention."

(6) Attaching "Warranty Card" to the product. This method is an important part of the service plan of the Atwater Kent Mfg. Co., maker of radio apparatus. L. A. Charbonnier, service manager, says:

"Our 'Warranty Card'—a section of which is attached to the product when sold and goes to the consumer—instructs the customer to communicate with his dealer if he has difficulty of any kind with the product.

"The last line of our instructions furnished with the set reads: 'If you experience difficulty, communicate with your dealer, who will make the necessary adjustment under warranty terms.'

"The tendency to substitute 'gyp' parts is discouraged by the fact that we do not furnish data on values of parts—our thought being that such data are unnecessary if genuine replacement parts are used at all times."

**Cooperation with Companies**

(7) Cooperating closely with authorized service companies Servel Sales, Inc., is finding that this plan works out. Says Service Manager C. L. Olin: "Before the advent of the Servel Hermetic, we found it desirable to provide authorized service companies for users of the early model product." By maximum discounts to these authorized service companies, outside manufacture of parts was discouraged.

(8) Varying discounts according to dealer's set-up. This plan is similar to that of Servel in regard to discounts, the idea being to offer adequate inducement for the dealer to handle service. This plan involves a graded dealer set-up.

(9) Excelling the independent service companies. This is a scheme of general excellence which leaves no place for the local tinkerer, according to H. F. Lehman, installation and service manager of Frigidaire Corp.

(10) Guaranteeing product, with free service. The Sparks-Withington Co., manufacturer of Sparton refrigerators, provides a three-year guarantee period, with free service and free replacement of defective parts and provides that repairs to operating units must be made at the factory. (Other electric refrigerator manufacturers which do servicing at the factory include all manufacturers of sealed units—Editor's Note.)

(11) Using repair tags for permanent record. The Hanovia Chemical and Mfg. Co., maker of scientific and therapeutic apparatus, uses this method. A. R. Hopper of this company says:

"When Hanovia burners are sent to us for repair, they are returned with a green tag which specifies the precise repairs which have been made. Detachable parts of these tags, returned to us by users, are filed numerically according to the burner numbers, so that we can, at any time, ascertain very quickly whether a burner returned to us has ever been repaired before by us and, if so, in what way. This record eliminates complaints for unsatisfactory work really done by other companies."

(12) Requiring dealer O.K. on outside sale of parts. The Kelvinator Sales Corp., which ordinarily restricts the sale of parts to authorized dealers, also makes provisions for the out-of-the-way user.

"If we receive an order for parts from anyone other than our authorized dealers and distributors," says E. A. Seibert, director of service, "we refer the matter to our distributor for the territory and if he sees fit he will O.K. the completion of the order. Service is sometimes handled in this way when the distributor does not have representation in the town."

(13) Telling the story through salesmen. The Maytag Co. has salesmen and dealer alike stress the importance of calling in the regularly-established dealer if anything goes wrong with the machine.

(14) Telephone directory listing of authorized service stations. This plan is employed by the Apex Rotarex Corp. R. J. Strittmatter, vice president in charge of sales, says:

"We have in the United States 162 service stations at the present time and in most of the major trade centers a customer owning an Apex appliance can find an Apex-Rotarex service station listed in the telephone directory.

"We have had some difficulty in the past with unauthorized dealers listing themselves, but we have—either by legal process or otherwise—cleared up most of the telephone directories throughout the country, so that today the customer who consults the directory has no difficulty in finding an authorized service station."

(15) Educating the user. The P. A. Geier Co., manufacturer of Royal electric products, depends on this method. Also the May Oil Burner Corp. employs this system. Says E. Lyell Gunts, advertising manager, May Oil Burner Corp., "it emphasizes the vital necessity of doing business with our authorized dealers who agree, by contract with us, that they will maintain a staff of factory-trained installation and service men. We do the necessary educational work with our prospects before they become Quiet May owners."

(16) Controlling service through factory branches. The Holland Furnace Co. and the Eastman Kodak Co. take care of all repair work through factory branches.

# SERVICE HINTS

*By* FRANK W. GRAY

WHEN compressors which have previously been in use are to be installed on refrigeration jobs, they should be thoroughly tested and inspected inside and out. Failure to do this recently caused an independent service company the trouble and expense of several trips to a neighboring town where a system was being installed as the first of a succession of jobs to be put in for a chain of cash and carry markets.

The compressor was an ammonia ½-ton unit, and had been "reconditioned" by a coat of paint to look like new. The service men assumed that it was a new compressor, and therefore in good mechanical condition, and proceeded to install it in the usual way.

The job developed trouble soon after leaving it, and a hurried trip to the scene of action disclosed that there was insufficient head pressure to produce the required temperature.

When the compressor was taken down it was discovered that the discharge valves were badly pitted and corroded. This leaky valve condition was corrected by grinding in the valve seats, and the compressor was thoroughly cleaned and oiled.

Within a week or so another service call came in from this job. This time it was discovered that the pressure gauge on the machine was badly in error, and that the back pressure was really much higher than the workmen had supposed it to be. After a new gauge had been installed and the system was properly correlated, no further trouble was experienced.

Another job in which trivial carelessness on the part of the service men caused a great deal of trouble and expense, was being installed about 30 miles from the city in which the agency was located.

**Dryer Develops Trouble**

This time it was a defective dryer that caused the trouble. The service men found it necessary to borrow two dryers, and connected them into the newly installed system without inspecting them carefully to see that they were in good shape. One of the dryers proved to be lacking a fine mesh screen on the outlet side, and the entire charge of calcium chloride was washed through the system.

Needless to say, it clogged up the valves, and necessitated a thorough cleaning of the compressor, the expansion valves and a blowing out of the coils. When it came to blowing out the tubing lines, the men found that 300 lbs. of air pressure would not dislodge the calcium chloride deposit that had lodged in a run of tubing which had been trenched and buried in the concrete floor.

It was necessary to chisel out and cut this tubing in three places before the line was finally blown clear.

Such examples emphasize the need for alert and painstaking care on the part of service men in making installations. The men who were employed on the above-mentioned jobs were very competent and experienced—so competent and experienced, in fact, that they did not deem it necessary to take those small precautions which usually go far towards making a trouble-free job.

A compressor recently removed from a sulphur dioxide system was overhauled after several years of use and it was found that the intake opening in the cast-iron crankcase was eaten out-of-round by acid action. The job had evidently been operating with a small percentage of moisture in the system—not enough to stick up the compressor, but sufficient to cause a slow erosion of the metallic surfaces.

This intake orifice of the crankcase was found to be badly decomposed around the edges, a black sludge being removable with the finger. The machine was thoroughly washed out with carbon tetrachloride and the sludge carefully wiped away.

Within a few weeks the job again developed trouble. The service men found that the valves were stuck up with a black substance. The compressor was again taken down and this time the corroded intake orifice was carefully filed down to a bright iron surface.

The job was then reinstalled and has never given trouble since. It was evident that the decomposed iron gave off particles of sludge into the circulating refrigerant, which eventually lodged in the valves and required a thorough scraping and filing of the acid-eaten surfaces.

Another instance of decomposed metallic particles clogging up the valves in a system was found in a job where some bronze welded connectors had been made up in the shop to supplement the lack of the manufactured fittings.

After several months of operation, the job suddenly developed trouble. A repetition of service calls finally disclosed that the welded bronze joints had been gradually sloughing off metallic particles which had been washed through the system to the valve seats.

# Independent Service Company Prefers Commercial to Contract Business

DETROIT—That the contract method of operating a refrigeration business is often unsatisfactory to the customer and is unprofitable to the service company in the long run, is the opinion of W. G. Euth, president of the Euth-Lambrecht Co., independent service organization here.

"The owner of a refrigeration system frequently loses money by paying a service company a lump sum for a given period's service and inspection, because the period may elapse without the company's having been required to give value received in labor and parts," says Euth.

"We believe it is the best policy to give high-quality service on each job, and rely on the customer's calling us back when his refrigeration system again needs attention." The customer often "expects too much" from a company when a contract has been made, he adds.

The service company profits from this plan, he believes, because the owner is not given the impression that the company is trying to collect money for work or parts which it may not have to supply, in case the refrigeration system functions perfectly during a long period of time.

"When the customer thinks that the company is not attempting to get money without actually giving its equivalent in service, he will continue to patronize the organization indefinitely," thinks Euth.

He admits that there are several good arguments in favor of the contract method of doing business, and says that his company sometimes takes business on this basis, although it refrains from doing so when possible.

Euth-Lambrecht Co. has been organized since 1922, and conducts a sales business in conjunction with its service activities. It sells and installs Delphos ice machines, manufactured by the Delphos Ice Machine Co. of Delphos, Ohio, and Juruick refrigeration equipment, manufactured by the American Engineering Co. of Philadelphia.

The company specializes in the servicing of ammonia refrigeration systems in food markets, dairies and packing houses, according to Euth.

Euth says that the matter of collections has offered little difficulty during the past year, and that there has been slight decline in the company's volume of business. Ten service men are employed at the present time, the same number having been hired by the company during the last two years.

No great difficulty is experienced by the organization in securing replacement parts, most of the large ice machine companies being willing to furnish such parts at all times, Euth states.

The company's service men are paid on an hourly basis. The organization is of the opinion that the salaried employe will do his work more sketchily and hurriedly than the one who is given some inducement to work as many hours as are needed to complete a job in first-class fashion.

Some work is done in the field of household refrigeration, but the company prefers commercial work, and makes little attempt to secure new business in household service work.

The organization also offers an electrical contracting service, specializing in power wiring and the installation and servicing of electrical equipment connected with ice machines. Euth points out that work in one of the company's two branches of service often leads to the securing of work in the other. W. L. Lambrecht is in charge of the electrical service, Euth heads refrigeration.


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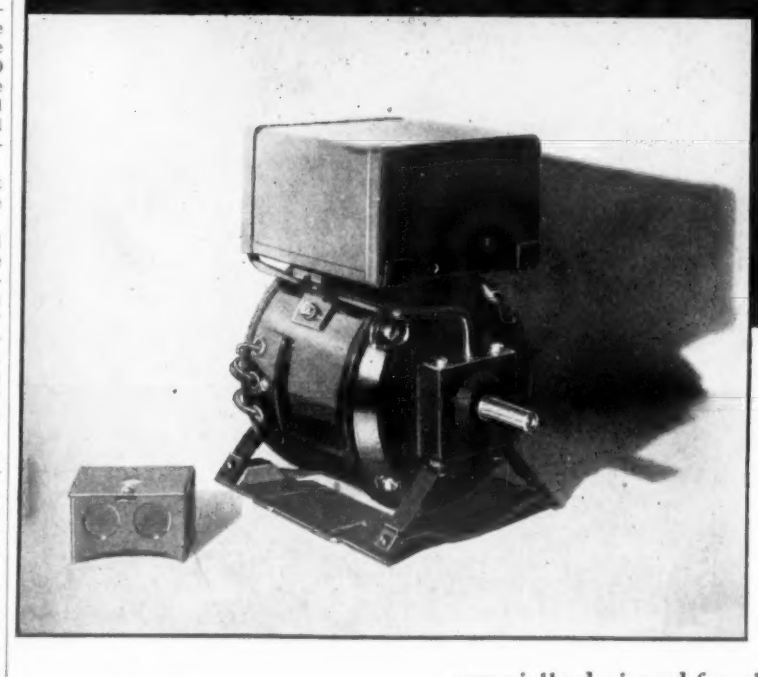

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# Ammonia Played Active Role in Growth Of Refrigeration; Properties Given

By R. J. Quinn*
Assistant Sales Manager, The Mathieson Alkali Works

HISTORICALLY, the commercial manufacture and use of ammonia, and especially of anhydrous ammonia, are so closely related to the development of the science of refrigeration, that they are practically inseparable. Ammonia was first described by Priestley in 1774. In 1823 Faraday succeeded in condensing ammonia gas to a liquid by applying pressure and then cooling it. This discovery proved of the greatest importance and is practically the basis for the use of anhydrous ammonia as a refrigerant.

From 1755 to 1834 many refrigerating experiments were performed and many experimental machines were constructed, but very little real progress was made. William Cullen, Jacob Perkins, A. C. Twining, John Gorrie, and Ferdinand Carre were important contributors during the pioneer stage of development.

In the years of 1873-75 the first successful ammonia compression machines were introduced by C. P. G. Linde of Germany and David Boyle of the United States. Until 1890, however, the practical utilization and commercial application of refrigeration were quite limited, and development slowed up.

During 1890 an incident occurred which awakened tremendous public interest in the possibilities of mechanical refrigeration — namely, the greatest shortage in the crop of natural ice that had ever been recorded. To this happening may be attributed the impetus that really started the rapid development and utilization of mechanical refrigeration in the United States. By a peculiar coincidence, the winter of 1931-32 was particularly mild and has produced the greatest shortage of natural ice harvested since 1890.

Through this period of development of refrigeration equipment and technic, the manufacture of anhydrous ammonia has kept actively apace so that at the present time between 20,000,000 and 30,000,000 lbs. are used annually in the United States for this purpose.

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### Properties

Ammonia is a compound gas composed of nitrogen and hydrogen in the proportion of 1 part of nitrogen to 3 parts of hydrogen by volume, or 14 parts of nitrogen and 3 parts of hydrogen by weight, and is represented by the symbol $NH_3$.

Ammonia gas is colorless and possesses a sharp pungent odor and alkaline taste. By pressure and cooling, it can be condensed to a colorless, mobile, and strongly refringent liquid of specific gravity 0.6382 at 32° F., which boils at —28° F. at atmospheric pressure and solidifies to a white crystalline mass at —107.86° F.

### Inflammability and Explosibility

From time to time attention has been directed to fires or explosions in refrigerating rooms in which serious leakage of ammonia has taken place. Numerous investigations by private and official organizations have developed fairly complete and consistent data regarding the explosive limits of ammonia-air mixtures and regarding the combustion of ammonia. From 13.1 to 26.77 per cent of ammonia in mixtures with air appear to be the explosive limits of these mixtures.

Although many textbooks state that ammonia will not burn, there are certain conditions under which flame may be supported. Under these conditions a yellow flame is produced, but it is difficult to distinguish between inflammability and explosibility.

### Stability

For all practical purposes, ammonia is stable when exposed to pressure temperature and contact conditions that are ordinarily met with in the normal operation of an ammonia compressor. When abnormal conditions prevail, there is some dissociation of ammonia into its component gases.

The presence of hydrogen gas in a compression system which has previously been free from it, indicates that some decomposition is taking place and that the machine is not being operated properly.

### Corrosion

Ammonia is a strong alkali and will react as such when various textile, food, fabric, or fur products are exposed to it. It is very soluble in water. It is not corrosive to iron or steel, but readily attacks copper, brass, zinc, aluminum, and many alloys, especially those containing copper. They should consequently be avoided in the construction of equipment which may become exposed to ammonia fumes or solutions.

### Standard Ton Data

The commercial unit of refrigeration is the quantity of heat required to melt 1 ton (2,000 lbs.) of pure solid ice into water at 32° F. Since 1 lb. of ice will absorb 144 B.t.u. at 32° F. in melting, 1 ton will absorb 2,000 × 144 or 288,000 B.t.u. Therefore 1 standard commercial ton of refrigeration is the removal of 288,000 B.t.u. The rate of performance is 1 day of 24 hours.

The latent heat of evaporation of anhydrous ammonia is higher than that of any other commonly used refrigerants. It is therefore more efficient from the standpoint of quantity required to perform a given amount of refrigeration.

Other physical properties, however, must be considered, such as cubic feet of piston displacement of compressor per ton and horsepower input per ton of refrigeration. Table I taken from H. J. Macintire's "Principles of Mechanical Refrigeration" shows very clearly the common properties of several refrigerants.

### Toxicity

Ammonia is not poisonous. It is a powerful irritant upon the mucous membranes of the eyes, nose, throat, and lungs. Because of its extreme solubility in water, it also irritates any skin surface where an accumulation of moisture or perspiration takes place.

The physiological effect of ammonia is not cumulative, and workmen may develop a certain degree of immunity or tolerance toward exposure to ammonia in low concentrations.

An atmosphere containing five volumes per thousand appears to be the maximum that may be inhaled without serious consequence, and inasmuch as an atmosphere containing one-twentieth volume per thousand imparts a strong odor to air, adequate warning is provided of conditions which may become dangerous.

Ammonia acts as a powerful heart stimulant, both when inhaled in low concentrations and when taken internally in small doses. When anhydrous ammonia comes in contact with the skin it causes a condition similar to frostbite or a burn, and the affected part responds to the usual treatments for such afflictions. Because of its odor and its characteristic chemical reactions, leaks in an ammonia system may be readily detected.

### Ranges of Application

Anhydrous ammonia may be employed as a refrigerant under an extremely wide range of conditions. It is used in household mechanical refrigerators which contain approximately 2 pounds of refrigerant. It is used in commercial units ranging up to 500 tons of refrigeration per day, charged with 70,000 pounds of anhydrous ammonia.

A wide variation of temperature may also be covered, ranging from atmospheric down to —60° F. in the case of some recently developed multiple-stage units used in quick-freeze processes for the treatment of food products.

The pressures encountered in the normal operation of ammonia compression machines are not excessive. They depend upon the quantity and temperature of condenser water used and rarely exceed 250 lbs. per sq. in. Ammonia fittings, piping, gages, etc., are highly standardized and are well known to the trade.

The lubrication of any refrigerating machine is an important factor in its operation. When ammonia is used, the lubricant must be especially adaptable for low-temperature work. Considerable care and judgment must be used in the selection of lubricants, and definite specifications are essential to the standardization and control of the lubricants used.

### Shipping Containers and Transportation

Anhydrous ammonia is generally shipped in cylinders containing 50, 100, or 150 lbs. Some cylinders of 25 and even 10 lbs. capacity are available. When a large amount is used at a central location, it may be shipped in single-unit class V tank cars containing 50,000 lbs. It is estimated that there are in service in the United States 275,000 cylinders of assorted sizes and 250 of the single-unit tank cars. Because of the low density of anhydrous ammonia, it has not been practical to ship it in multi-unit tank cars.

All shipping containers should be designed, manufactured, and maintained in accordance with Interstate Commerce Commission regulations. The Bureau of Explosives has prepared and issued specifications for containers to comply with Interstate Commerce Commission regulations.

Anhydrous ammonia may be shipped in cylinders meeting Specifications ICC-4, ICC-3, ICC-3A480, or ICC-4A480. In actual practice, however, Specification ICC-4 has been found most suitable, and the industry has accepted this type of cylinder as standard.

All cylinders of anhydrous ammonia shipped by freight must be properly identified with the Interstate Commerce Commission green label.

Another important regulation is that the cylinders may be filled to only 54 per cent of the water capacity of the cylinder. This prevents overloading and allows sufficient space for any expansion of the liquid which might occur.

### Availability

The available potential supply of anhydrous ammonia is almost unlimited. There is always available a large amount of material which is a by-product of coking or gas-producing operations. There is also a rapidly growing industry producing ammonia synthetically.

There are now operating in the United States nine synthetic ammonia plants capable of producing 350,000,000 lbs. of ammonia per year, which is far in excess of the refrigerating industry's needs.

### Selling Prices

Anhydrous ammonia is generally sold on a delivered price basis, including freight charges for full and empty cylinders. The price will, therefore, vary depending on the distance of the consumer from producing points.

The average tare weight of a 100-lb. cylinder is 170 lbs., so that in the delivery of 100 lbs. of anhydrous ammonia, freight charges must be paid on a gross weight of 270 lbs. for the full cylinder, and 170 lbs. for the empty cylinder, or 440 lbs. in all. Freight rates, and particularly changes in freight rates, have an important influence on anhydrous ammonia prices.

The price of anhydrous ammonia has varied over a rather wide range in the last ten years. Table II shows the prices that have prevailed at six typical consuming points.

### Specifications

Anhydrous ammonia is one of the purest chemical products that is sold today as a commercial specialty. As a result of highly competitive methods of selling this material, quality has been developed to a very unusual standard, and the American product is superior to that found anywhere else in the world.

Anhydrous ammonia may be purchased against very exacting specifications. An example of the improvement that has been made in the quality of the product is shown in the following comparison of specifications.

Specification I represents the chemical requirements of U. S. Navy Department Specification 51A5a dated November 1, 1919, and Specification 2 represents the requirements that are written into all of its contracts by one of the prominent manufacturers:

SPECIFICATION 1

Anhydrous ammonia shall conform to the following requirements:

(a) Noncondensable gas. The gas drawn from the top of the cylinder on the first opening shall contain less than 40 cc. of noncondensable gas per 100 grams of ammonia.

(b) Residue. The residue after free evaporation of 100 cc. of liquid ammonia, with due precaution to exclude moisture and to prevent contamination of sample in drawing, shall be less than 0.04 per cent.

(c) Impurities. Anhydrous ammonia shall contain no objectionable impurities, such as pyridine, acetonitrile, naphthalene, hydrogen sulfide, organic acid or other organic compounds, in amounts which can be determined by other than the most accurate laboratory methods. Aromatic amines, estimated as pyridine, shall not exceed 0.001 per cent; and organic acid, estimated as acetic acid shall not exceed 0.005 per cent.

SPECIFICATION 2

Anhydrous ammonia shall conform to the following chemical requirements:

(a) Noncondensable gas. The gas drawn from the top of the cylinder on the first opening shall contain less than 20 cc. of noncondensable gas per 100 grams of ammonia.

(b) Residue. The residue after free evaporation of 100 cc. of liquid ammonia, with due precaution to exclude moisture and to prevent contamination of sample in drawing, shall be less than 0.02 per cent.

(c) Impurities. Anhydrous ammonia shall contain no objectionable impurities, such as pyridine, acetonitrile, naphthalene, hydrogen sulfide, organic acid, or other organic compounds.

### Air in Anhydrous Ammonia

The air content of the ammonia in a compression system has an important influence on the power consumption. The air or noncondensable gas reduces the capacity of the condenser, with a corresponding increase in condenser pressure and power consumption. Calculations show that the introduction of 5 per cent of air in an ammonia compression system reduces the coefficient of performance by the surprising figure of 22.3 per cent (Table III).

There is no excuse for the presence of excessive amounts of noncondensable gas in an ammonia system, as there are on the market several very satisfactory "air separators" which at a very nominal cost eliminate these objectionable gases.

## *Comparative Data on Refrigerants; Price Trends of Ammonia*

TABLE I—COMPARISON OF REFRIGERANTS

| Refrigerant | Thermal Potential Saturated Vapor at 5° F. B.t.u. | Thermal Potential Liquid at 86° F. B.t.u. | Net Refrigeration per Lb. of Refrigerant B.t.u | Sp. Vol. of Satd. Vapor at 5° F. Cu. ft. | Piston Displacement per Ton per Minute Cu. ft. | Pressure At 5° F. Lb./sq. in. abs. | Pressure At 86° F. Lb./sq. in. abs. | Piston Displacement per Ton per Minute With That for $CO_2$ Taken as Unity Cu. ft. |
|---|---|---|---|---|---|---|---|---|
| Ammonia ($NH_3$) | 613.3 | 138.8 | 474.4 | 8.15 | 3.44 | 34.3 | 169.3 | 4.3 |
| Carbon dioxide ($CO_2$) | 101.0 | 36.5 | 64.5 | 0.258 | 0.80 | 32.9 | 1045.0 | 1.0 |
| Sulphur dioxide ($SO_2$) | 183.5 | 42.1 | 141.4 | 6.42 | 9.08 | 11.8 | 66.45 | 11.34 |
| Ethyl chloride ($C_2H_5Cl$) | 163.5 | 21.0 | 142.5 | 16.18 | 22.7 | 4.5 | 27.4 | 28.35 |
| Methyl chloride ($CH_3Cl$) | 171.1 | 27.7 | 143.3 | 4.65 | 6.49 | 21.0 | 95.5 | 8.11 |
| Butane ($C_4H_{11}$) | 165.4 | 16.0 | 149.4 | 10.0 | 13.4 | 11.0 | 42.9 | 16.75 |
| Propane ($C_3H_8$) | 159.8 | 17.8 | 142.0 | 2.4 | 3.38 | 43.9 | 159.0 | 4.22 |

TABLE II—COMPARATIVE PRICES OF ANHYDROUS AMMONIA, 1924 TO 1932, INCLUSIVE

| City | 8-1-24 | 10-17-27 | 6-9-28 | 11-15-28 | 2-4-29 | 4-15-29 | 11-27-29 | 12-1-30 | 12-1-31 |
|---|---|---|---|---|---|---|---|---|---|
| Atlanta | $35.00 | $17.50 | $18.00 | $18.00 | $18.50 | $19.00 | $19.00 | $19.00 | $19.00 |
| Boston | 31.00 | 13.50 | 13.50 | 13.50 | 14.00 | 14.00 | 14.00 | 14.00 | 14.00 |
| Chicago | 30.00 | 14.50 | 14.50 | 15.00 | 15.50 | 15.50 | 15.50 | 15.50 | 15.50 |
| New York | 30.00 | 13.50 | 13.50 | 13.50 | 14.00 | 14.00 | 14.00 | 14.00 | 14.00 |
| Philadelphia | 30.00 | 13.50 | 13.50 | 13.50 | 14.00 | 14.00 | 14.00 | 14.00 | 14.00 |
| St. Louis | 30.00 | 14.50 | 14.50 | 15.00 | 15.50 | 15.50 | 15.50 | 15.50 | 15.50 |

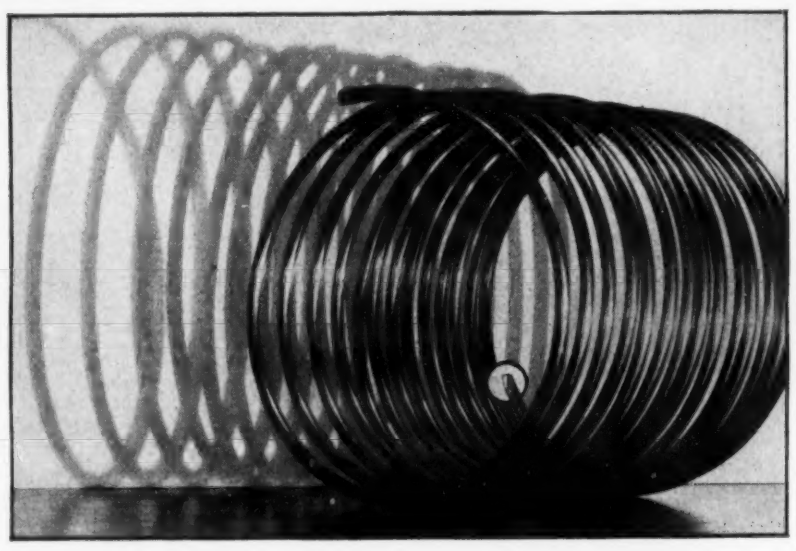
TABLE III—CALCULATED PERFORMANCES FOR MIXTURES OF AIR AND AMMONIA (4)

| Air in Mixture | Compressing Work per lb. Ammonia | Refrigeration per lb. Ammonia | Coefficient of Performance | Increase of Compressing Work | Decrease of Refrigeration | Reduction in Coefficient of Performance |
|---|---|---|---|---|---|---|
| % | B.t.u. | B.t.u. | | B.t.u. | B.t.u. | % |
| 0 | 119.6 | 482 | 4.40 | .. | .. | .. |
| 1 | 120.2 | 473 | 3.94 | 0.6 | 9 | 12.7 |
| 3 | 121.6 | 444.9 | 3.66 | 2.0 | 37 | 16.8 |
| 5 | 122.8 | 420.2 | 3.42 | 3.2 | 62 | 22.3 |

## NEW CELOTEX PRODUCT USED AS CONCRETE FORMS

CHICAGO—Experiments with Celotex Tempered Hard Panel board, new product of the Celotex Co., were conducted here recently, when forms made from the material were used in molding 500 concrete footings for the steel framework of the General Exhibit Bldg. of Chicago's 1933 "A Century of Progress."

Celotex Tempered Hard Panel board is a two-ply laminated board, ¼-in. in thickness. The lamination provides two smooth surfaces.



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All French Copper Refrigeration Tubes possess the requisite properties for lasting, dependable service. Their grain structure is uniform. This important quality is in every coil because highest metallurgical skill, long manufacturing experience and only the best of raw material go into their production. Additional information will be furnished upon request.

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# SURVEYS APPEAL FOR AUTHORIZED SERVICE

NEW YORK CITY—Sixteen different methods employed by leading household appliance manufacturers to induce customers to use authorized service were listed in a survey conducted recently by *Printers' Ink*. These methods are as follows:

(1) Selling parts only to authorized dealers. This method is employed by the Kelvinator Sales Corp. and the May Oil Burner Corp.

(2) Binding dealer to use bona fide parts furnished by the company. The Stromberg-Carlson Telephone Mfg. Co. uses this system.

(3) Enclosing or sealing operating parts. General Electric has long offered its refrigerator with enclosed operating parts and sealed controls and now Servel is building its machine with the same features. (Majestic, Westinghouse, Williams, Clago and U. S. refrigerators all offer hermetically sealed refrigerating units—Editor's Note.)

(4) Using special casting dies, not easily duplicated, for parts. This is the system used by the Hoffman Heater Co.

**Service Man's 'Identification' Card**

(5) Using "Identification" card for service man. G. A. Johnson, service manager of the Delco Appliance Corp., says:

"In the case of Delco-Light plants, we feel that we have made considerable progress by including in instruction books and on the service instruction cards a reference to the 'Serviceman's Identification Card.' These cards are renewed every six months, to avoid their continued use in case of change in official service representation. The color of the card is also changed with each six months' period. It is necessary, of course, to impress on users the importance of official service and to bring the identification card to their attention."

(6) Attaching "Warranty Card" to the product. This method is an important part of the service plan of the Atwater Kent Mfg. Co., maker of radio apparatus. L. A. Charbonnier, service manager, says:

"Our 'Warranty Card'—a section of which is attached to the product when sold and goes to the consumer—instructs the customer to communicate with his dealer if he has difficulty of any kind with the product.

"The last line of our instructions furnished with the set reads: 'If you experience difficulty, communicate with your dealer, who will make the necessary adjustment under warranty terms.'

"The tendency to substitute 'gyp' parts is discouraged by the fact that we do not furnish data on values of parts—our thought being that such data are unnecessary if genuine replacement parts are used at all times."

**Cooperation with Companies**

(7) Cooperating closely with authorized service companies Servel Sales, Inc., is finding that this plan works out. Says Service Manager C. L. Olin: "Before the advent of the Servel Hermetic, we found it desirable to provide authorized service companies for users of the early model product." By maximum discounts to these authorized service companies, outside manufacture of parts was discouraged.

(8) Varying discounts according to dealer's set-up. This plan is similar to that of Servel in regard to discounts, the idea being to offer adequate inducement for the dealer to handle service. This plan involves a graded dealer set-up.

(9) Excelling the independent service companies. This is a scheme of general excellence which leaves no place for the local tinkerer, according to H. F. Lehman, installation and service manager of Frigidaire Corp.

(10) Guaranteeing product, with free service. The Sparks-Withington Co., manufacturer of Sparton refrigerators, provides a three-year guarantee period, with free service and free replacement of defective parts and provides that repairs to operating units must be made at the factory. (Other electric refrigerator manufacturers which do servicing at the factory include all manufacturers of sealed units—Editor's Note.)

(11) Using repair tags for permanent record. The Hanovia Chemical and Mfg. Co., maker of scientific and therapeutic apparatus, uses this method. A. R. Hopper of this company says:

"When Hanovia burners are sent to us for repair, they are returned with a green tag which specifies the precise repairs which have been made. Detachable parts of these tags, returned to us by users, are filed numerically according to the burner numbers, so that we can, at any time, ascertain very quickly whether a burner returned to us has ever been repaired before by us and, if so, in what way. This record eliminates complaints for unsatisfactory work really done by other companies."

(12) Requiring dealer O.K. on outside sale of parts. The Kelvinator Sales Corp., which ordinarily restricts the sale of parts to authorized dealers, also makes provisions for the out-of-the-way user.

"If we receive an order for parts from anyone other than our authorized dealers and distributors," says E. A. Seibert, director of service, "we refer the matter to our distributor for the territory and if he sees fit he will O.K. the completion of the order. Service is sometimes handled in this way when the distributor does not have representation in the town."

(13) Telling the story through salesmen. The Maytag Co. has salesmen and dealer alike stress the importance of calling in the regularly-established dealer if anything goes wrong with the machine.

(14) Telephone directory listing of authorized service stations. This plan is employed by the Apex Rotarex Corp. R. J. Strittmatter, vice president in charge of sales, says:

"We have in the United States 162 service stations at the present time and in most of the major trade centers a customer owning an Apex appliance can find an Apex-Rotarex service station listed in the telephone directory.

"We have had some difficulty in the past with unauthorized dealers listing themselves, but we have—either by legal process or otherwise—cleared up most of the telephone directories throughout the country, so that today the customer who consults the directory has no difficulty in finding an authorized service station."

(15) Educating the user. The P. A. Geier Co., manufacturer of Royal electric products, depends on this method. Also the May Oil Burner Corp. employs this system. Says E. Lyell Gunts, advertising manager, May Oil Burner Corp., "it emphasizes the vital necessity of doing business with our authorized dealers who agree, by contract with us, that they will maintain a staff of factory-trained installation and service men. We do the necessary educational work with our prospects before they become Quiet May owners."

(16) Controlling service through factory branches. The Holland Furnace Co. and the Eastman Kodak Co. take care of all repair work through factory branches.

# SERVICE HINTS

*By* FRANK W. GRAY

WHEN compressors which have previously been in use are to be installed on refrigeration jobs, they should be thoroughly tested and inspected inside and out. Failure to do this recently caused an independent service company the trouble and expense of several trips to a neighboring town where a system was being installed as the first of a succession of jobs to be put in for a chain of cash and carry markets.

The compressor was an ammonia ½-ton unit, and had been "reconditioned" by a coat of paint to look like new. The service men assumed that it was a new compressor, and therefore in good mechanical condition, and proceeded to install it in the usual way.

The job developed trouble soon after leaving it, and a hurried trip to the scene of action disclosed that there was insufficient head pressure to produce the required temperature.

When the compressor was taken down it was discovered that the discharge valves were badly pitted and corroded. This leaky valve condition was corrected by grinding in the valve seats, and the compressor was thoroughly cleaned and oiled.

Within a week or so another service call came in from this job. This time it was discovered that the pressure gauge on the machine was badly in error, and that the back pressure was really much higher than the workmen had supposed it to be. After a new gauge had been installed and the system was properly correlated, no further trouble was experienced.

Another job in which trivial carelessness on the part of the service men caused a great deal of trouble and expense, was being installed about 30 miles from the city in which the agency was located.

**Dryer Develops Trouble**

This time it was a defective dryer that caused the trouble. The service men found it necessary to borrow two dryers, and connected them into the newly installed system without inspecting them carefully to see that they were in good shape. One of the dryers proved to be lacking a fine mesh screen on the outlet side, and the entire charge of calcium chloride was washed through the system.

Needless to say, it clogged up the valves, and necessitated a thorough cleaning of the compressor, the expansion valves and a blowing out of the coils. When it came to blowing out the tubing lines, the men found that 300 lbs. of air pressure would not dislodge the calcium chloride deposit that had lodged in a run of tubing which had been trenched and buried in the concrete floor.

It was necessary to chisel out and cut this tubing in three places before the line was finally blown clear.

Such examples emphasize the need for alert and painstaking care on the part of service men in making installations. The men who were employed on the above-mentioned jobs were very competent and experienced—so competent and experienced, in fact, that they did not deem it necessary to take those small precautions which usually go far towards making a trouble-free job.

A compressor recently removed from a sulphur dioxide system was overhauled after several years of use and it was found that the intake opening in the cast-iron crankcase was eaten out-of-round by acid action. The job had evidently been operating with a small percentage of moisture in the system—not enough to stick up the compressor, but sufficient to cause a slow erosion of the metallic surfaces.

This intake orifice of the crankcase was found to be badly decomposed around the edges, a black sludge being removable with the finger. The machine was thoroughly washed out with carbon tetrachloride and the sludge carefully wiped away.

Within a few weeks the job again developed trouble. The service men found that the valves were stuck up with a black substance. The compressor was again taken down and this time the corroded intake orifice was carefully filed down to a bright iron surface.

The job was then reinstalled and has never given trouble since. It was evident that the decomposed iron gave off particles of sludge into the circulating refrigerant, which eventually lodged in the valves and required a thorough scraping and filing of the acid-eaten surfaces.

Another instance of decomposed metallic particles clogging up the valves in a system was found in a job where some bronze welded connectors had been made up in the shop to supplement the lack of the manufactured fittings.

After several months of operation, the job suddenly developed trouble. A repetition of service calls finally disclosed that the welded bronze joints had been gradually sloughing off metallic particles which had been washed through the system to the valve seats.

# Independent Service Company Prefers Commercial to Contract Business

DETROIT—That the contract method of operating a refrigeration business is often unsatisfactory to the customer and is unprofitable to the service company in the long run, is the opinion of W. G. Euth, president of the Euth-Lambrecht Co., independent service organization here.

"The owner of a refrigeration system frequently loses money by paying a service company a lump sum for a given period's service and inspection, because the period may elapse without the company's having been required to give value received in labor and parts," says Euth.

"We believe it is the best policy to give high-quality service on each job, and rely on the customer's calling us back when his refrigeration system again needs attention." The customer often "expects too much" from a company when a contract has been made, he adds.

The service company profits from this plan, he believes, because the owner is not given the impression that the company is trying to collect money for work or parts which it may not have to supply, in case the refrigeration system functions perfectly during a long period of time.

"When the customer thinks that the company is not attempting to get money without actually giving its equivalent in service, he will continue to patronize the organization indefinitely," thinks Euth.

He admits that there are several good arguments in favor of the contract method of doing business, and says that his company sometimes takes business on this basis, although it refrains from doing so when possible.

Euth-Lambrecht Co. has been organized since 1922, and conducts a sales business in conjunction with its service activities. It sells and installs Delphos ice machines, manufactured by the Delphos Ice Machine Co. of Delphos, Ohio, and Juruick refrigeration equipment, manufactured by the American Engineering Co. of Philadelphia.

The company specializes in the servicing of ammonia refrigeration systems in food markets, dairies and packing houses, according to Euth.

Euth says that the matter of collections has offered little difficulty during the past year, and that there has been slight decline in the company's volume of business. Ten service men are employed at the present time, the same number having been hired by the company during the last two years.

No great difficulty is experienced by the organization in securing replacement parts, most of the large ice machine companies being willing to furnish such parts at all times, Euth states.

The company's service men are paid on an hourly basis. The organization is of the opinion that the salaried employe will do his work more sketchily and hurriedly than the one who is given some inducement to work as many hours as are needed to complete a job in first-class fashion.

Some work is done in the field of household refrigeration, but the company prefers commercial work, and makes little attempt to secure new business in household service work.

The organization also offers an electrical contracting service, specializing in power wiring and the installation and servicing of electrical equipment connected with ice machines. Euth points out that work in one of the company's two branches of service often leads to the securing of work in the other. W. L. Lambrecht is in charge of the electrical service, Euth heads refrigeration.


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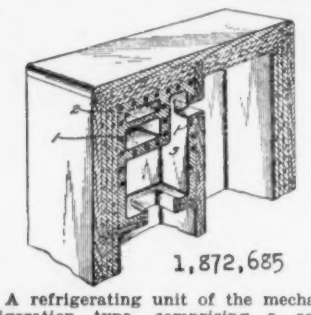
# REVIEW OF LATEST PATENTS GRANTED

## ISSUED AUGUST 23, 1932

1,872,685. COOLING CHAMBER FOR A MECHANICAL REFRIGERATING UNIT. Lloyd G. Copeman, Flint, Mich., assignor to Copeman Laboratories Co., Flint, Mich., a Corporation of Michigan. Filed Aug. 5, 1929. Serial No. 383,695. 3 Claims. (Cl. 62—95.)



1,872,685

1. A refrigerating unit of the mechanical refrigeration type, comprising a cooling chamber formed of plastically applied stone allowed to harden, and a monolithic thin surface layer of metal permanently secured to the said stone to seal the same from the atmosphere.

1,872,689. MEANS AND METHOD FOR REFRIGERATING ICE CREAM CONTAINERS AND THE LIKE. George F. Dickson, Chicago, Ill., assignor to George A. Pearson and Leslie Muter, Chicago, Ill. Filed Aug. 15, 1931. Serial No. 557,288. 2 Claims. (Cl. 62—91.5.)

1. Means for refrigerating nested containers, one of which encloses perishable material, for shipment, comprising means for condensing carbon dioxide in the form of flakes, and means for directing such flakes over and above the inner container, said last mentioned means providing for the collection of an excess flaked material for packing over the top of said inner container.

1,872,728. REFRIGERATING CABINET. Martin A. Gloekler, Erie, Pa., assignor to Bernard Gloekler Co., Pittsburgh, Pa., a Corporation of Pennsylvania. Filed March 19, 1931. Serial No. 523,716. 9 Claims. (Cl. 62—103.)

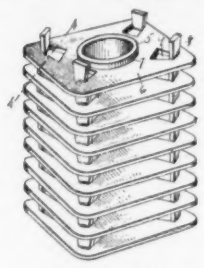
1. In a refrigerating cabinet, the combination with a refrigerating unit, of a supporting bracket therefor having transverse unit supporting members, a plurality of drip pan members, means for pivotally mounting said members on the bracket adjacent the unit, and removable means for securing said drip pan members in operative position beneath said unit.

1,872,779. DISPLAY DEVICE FOR REFRIGERATOR INSTALLATIONS. Harry H. McKee and Charles T. Walter, Chicago, Ill., assignors, by mesne assignments, to Industrial Patents Corp., Chicago, Ill., a Corporation of Delaware. Filed Sept. 9, 1929. Serial No. 391,474. 1 Claim. (Cl. 312—118.)

A device of the character described, comprising a housing including an inclined front wall having an opening therein, a display case mounted on said inclined wall over said opening and including a transparent top wall and a hinged door at the rear of the case, and a perforated partition between the housing and the case and secured over said opening for the support of articles thereon and whereby communication is established between the housing and the display case.

1,873,052. RADIATOR. Owen L. Seward, Newington Junction, Conn., assignor to The Bush Mfg. Co., Hartford, Conn., a Corporation of Connecticut. Filed Nov. 19, 1928. Serial No. 320,248. 3 Claims. (Cl. 257—262.)

1. A radiator element including a circulating tube, a plurality of radiating plates through which said tube extends, and spacers constituting integral parts of each plate and bent at an angle thereto from



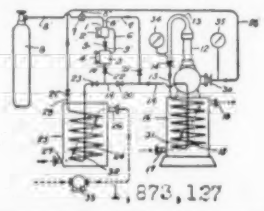
1,873,052

the body thereof leaving an opening therein to form said spacer, the outer end of said spacer being wider than that part of the opening in an adjacent plate in proximity to which it lies, said spacers being arranged around the tube with the inner larger ends of the openings disposed adjacent the tube.

1,873,101. REFRIGERATION AND THE LIKE. Thomas A. Banning, Jr., Wilmette, Ill., assignor to Dryice Equipment Corp., New York, N. Y., a Corporation of Delaware. Filed Dec. 31, 1930. Serial No. 506,097. 4 Claims. (Cl. 62—91.5.)

1. A refrigerative container having enclosed therein a covered gas-tight metal container enclosing solid carbon dioxide, said container being formed for escape of gas only by outflow from a higher level than the ordinary level of the solid carbon dioxide contained therein and arranged so that said outflow level is near but below the top of the enclosing container, together with a separate conduit extending downwardly from the outflow position of the gas-tight metal container around said container to thereby insulate the container against excessive inflow of heat.

1,873,127. APPARATUS FOR MEASURING CAPACITY OF A REFRIGERATING MACHINE. Haruhisa Inokuty, Tokyo, Japan. Filed Nov. 9, 1928. Serial No. 318,304. 1 Claim. (Cl. 73—167.)



1,873,127

An apparatus for measuring capacity of a refrigerating machine, placed in the refrigerant circuit of a refrigerating machine between the condenser and the expansion valve, including a direct volume meter for the liquefied refrigerant, comprising a volume measuring tank connected to the outlet of said condenser, a reservoir connected to the inlet of said expansion valve, a source of inert gas under pressure, means connecting said source to said measuring tank for supplying said inert gas to said measuring tank and reservoir at the desired pressure, a valve and pipe connecting the lower part of said measuring tank to said reservoir, and another pipe connecting upper parts of said tank and reservoir, substantially as described.

1,873,130. CONTACT FREEZING APPARATUS AND METHOD. Charles L. Jones, Pelham, and John D. Small, Douglaston, N. Y., assignors to Dryice Equipment Corp., New York, N. Y., a Corporation of Delaware. Filed Jan. 2, 1930. Serial No. 417,852. 5 Claims. (Cl. 62—91.5.)

5. A quick freezer for resilient products, including metallic plate elements and means for resiliently compressing relatively thin layers of said products between them, maintaining said plate elements at temperatures far below the freezing point of said product by pressing solid carbon dioxide in intimate heat exchange relation with other surfaces of each of said plate elements, and means for maintaining an atmosphere of carbon dioxide gas sublimated from said solid, in submerging relation to said plate elements, said products and said solid.

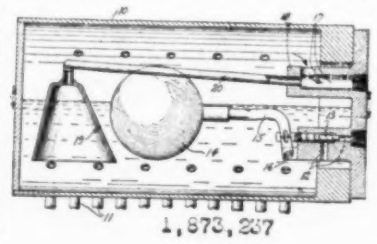
1,873,131. REFRIGERATING APPARATUS. Walter S. Josephson, New York, N. Y., assignor to Dryice Corp. of America, New York, N. Y., a Corporation of Delaware. Filed Dec. 12, 1929. Serial No. 413,466. 6 Claims. (Cl. 62—91.5.)

5. A refrigerator adapted for enclosing products to be refrigerated and means therein to refrigerate the same, including one or more containers enclosing solidified carbon dioxide and having low level outlet means through which the evaporated gas from within said container passes into the refrigerated space, means for closing the latter, and a high level outlet conduit for discharging excess gas from the container outside the refrigerator.

1,873,218. FREEZING TRAY. Alva W. Scott, Dayton, Ohio, assignor to The Inland Mfg. Co., Dayton, Ohio, a Corporation of Delaware. Filed Nov. 25, 1931. Serial No. 577,237. 6 Claims. (Cl. 62—108.5.)

1. A freezing container comprising: a metal tray, a flexible non-metallic tray inserted therein but having a flexible wall thereof spaced from the adjacent wall of said metal tray to provide a circulating space for a cooling medium, and a cooling medium in said circulating space.

1,873,237. REFRIGERATION. Edward T. Williams, New Rochelle, N. Y. Filed April 19, 1929. Serial No. 356,338. 13 Claims. (Cl. 62—115.)



1,873,237

4. In compression refrigerating apparatus of the flooded evaporator type having a working fluid comprising a solution of refrigerant and lubricant, the method of returning refrigerant gas and lubricant from the evaporator to the compressor which comprises constricting the upward path of flow of gas bubbles in the evaporator to foam lubricant at the liquid surface therein, and conducting the lubricant foam to the compressor through the vapor suction line.

1,873,287. FREEZING CONTAINER. Ralph H. Chilton, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich., a Corporation of Delaware. Filed Sept. 20, 1930. Serial No. 483,226. 11 Claims. (Cl. 62—108.5.)

1. A freezing tray comprising: a container having molded flexible rubber side walls and bottom, and an air-circulating hollow metal partition dividing said container into compartments, said partition being supported by said flexible rubber bottom whereby it may be moved with said bottom to facilitate ejection of frozen contents of said container.

1,873,319. REFRIGERATING SYSTEM. Walter L. Edel, New Haven, Conn., assignor, by mesne assignments, to Frigidaire Corp., a Corporation of Delaware. Filed Aug. 4, 1927. Serial No. 210,520. 21 Claims. (Cl. 62—5.)

1. In a refrigerating system of the absorption type, an absorber generator including a housing, a container for absorption material, means for supplying heat to said absorber generator, means for supplying a cooling medium to said absorber generator, and means operated in accordance with the fluid pressure in said container and the temperature of said housing for controlling the operation of said heat supply means and said cooling medium supply means.

1,873,364. REFRIGERATING APPARATUS AND METHOD. Henry M. Taylor, Cleveland, Ohio, assignor to Dryice Equipment Corp., New York, N. Y., a Corporation of Delaware. Filed Aug. 21, 1929. Serial No. 387,279. 7 Claims. (Cl. 62—91.5.)

1. A refrigerating cabinet of the class described, having therein spaced-apart, reticulated means each supporting a layer of fragmental frozen carbon dioxide and means for supporting between the same, in intimate heat exchange relation therewith, a thin layer of products to be refrigerated.

1,873,390. REFRIGERATING APPARATUS. William R. Hainsworth, New Haven, Conn., assignor, by mesne assignments, to Frigidaire Corp., a Corporation of Delaware. Filed Aug. 28, 1928. Serial No. 302,525. 15 Claims. (Cl. 62—118.)

1. In a refrigerating system, an absorber generator for alternately expelling and absorbing a gaseous refrigerant during successive distillation and absorption cycles, an evaporator for alternately receiving liquid refrigerant and evaporating said refrigerant during successive distillation and absorption cycles, a single conduit connecting said absorber generator and said evaporator, means for cooling said conduit during each distillation cycle to liquefy said refrigerant and means for heating said conduit to gasify liquid refrigerant therein at the initiation of each absorption cycle.

1,873,407. ICE CREAM FREEZER. Lyman F. Holland, Mobile, Ala. Filed June 25, 1931. Serial No. 546,842. 2 Claims. (Cl. 259—64.)

1. A freezer comprising in combination a support adapted to receive and contain in relatively fixed position a plurality of receptacles, a casing disposed adjacent one end of the support, said casing having adjacent the upper end thereof a lateral extension resting on the top of the support and substantially closing the top of said receptacles, sprockets arranged in said casing extention, an agitator for disposition in each of said receptacles, each of said agitators including a shaft keyed to one of said sprockets, a motor in said casing and including a shaft equipped with a sprocket, and a drive chain trained over all of said sprockets.

1,873,418. METHOD AND APPARATUS FOR MAKING DRY CARBON DIOXIDE PRODUCTS. Charles L. Jones, Pittsburgh, Pa., assignor to Dryice Corp. of America, New York, N. Y., a Corporation of Delaware. Filed Feb. 21, 1929. Serial No. 341,680. 22 Claims. Cl. 62—121.)

1. A method of removing water from liquid carbon dioxide which includes the steps of suddenly partially relieving the pressure on the liquid carbon dioxide by discharge through a nozzle of snow-forming type to vaporize part of the carbon dioxide and bring the liquid to a pressure and correlative temperature much below freezing of water but above the triple point of the carbon dioxide and bringing the cooled liquid into intimate relation with a suitable surface arranged to collect the water as frozen out crystals.

1,873,425. REFRIGERATING APPARATUS. Jesse G. King, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Feb. 28, 1929. Serial No. 343,496. 10 Claims. (Cl. 62—116.)

1. In a refrigerating cabinet, a tank, a cooling unit extending through an opening in a side wall of said tank, said opening being smaller than the extreme contour of said cooling unit, insulation over a portion of said tank, a panel about said insulation, said insulation and panel having openings in line with the opening in the side of the tank, said cooling unit being so proportioned that it may be tiltably removed from said cabinet through said openings.

1,873,435. REFRIGERATION. Alvar Lenning, New York, N. Y., assignor to Electrolux Servel Corp., New York, N. Y., a Corporation of Delaware. Filed April 9, 1929. Serial No. 353,825. 14 Claims. (Cl. 62—119.5.)

1. That improvement in thermo-syphon circulation which consists in raising a quantity of liquid by vapor below the liquid and reducing the vertical height of the liquid as it is raised.

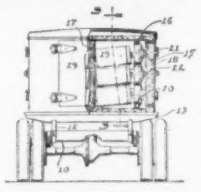
1,873,508. REFRIGERATION. Chelton H. Tanger, Evansville, Ind., assignor to Servel, Inc., New York, N. Y., a Corporation of Delaware. Filed Aug. 9, 1930. Serial No. 474,152. 13 Claims. (Cl. 62—108.5.)

1. A cover for an ice tray, said cover being formed of flexible non-metallic material and provided with depending partition forming projections also of flexible non-metallic material.

1,873,519. REFRIGERATION. Edward T. Williams, Pelham Manor, N. Y. Filed Oct. 7, 1930. Serial No. 486,929. 7 Claims. (Cl. 62—115.)

1. The method of circulating lubricant in a refrigerating system which comprises applying the specific heat of condensed refrigerant to boil a body of liquid refrigerant with lubricant therein to form bubbles of refrigerant vapor in said body, constricting the upward path of flow of a vapor bubbles in said body to foam the lubricant and removing the lubricant foam from the presence of said body.

1,873,572. REFRIGERATOR VEHICLE. Joseph Galamb, Detroit, Mich., assignor to Ford Motor Co., Dearborn, Mich., a Corporation of Delaware. Filed Feb. 17, 1931. Serial No. 516,392. 4 Claims. (Cl. 296—24.)



1,873,572

1. In a refrigerating vehicle having an article receiving and heat insulated compartment therein, a relatively large insulated door in each side of said compartment, an insulated partition extending across the compartment just inside of each door, horizontal racks extending between said partitions, and a plurality of relatively small insulated doors in each of said partitions giving access to said racks, access to the small doors being had only through the large doors.

1,873,670. CONDENSER FOR REFRIGERATING MACHINES. Christian Steenstrup, Schenectady, N. Y., assignor to General Electric Co., a Corporation of New York. Filed Dec. 12, 1931. Serial No. 580,599. 5 Claims. (Cl. 257—36.)

1. An air-cooled condenser for a refrigerating machine including a supporting member, a plurality of heat dissipating elements surrounding said supporting member, a substantially horizontal manifold arranged about said supporting member and having an inlet and an outlet for refrigerant, and upwardly extending closed ducts connected to said manifold, said ducts being arranged in heat exchange relation with said heat dissipating elements.

1,873,939. TUBE BENDING MACHINE. Arthur J. Mason, West Hartford, and William L. Tancred, Hartford, Conn., assignors to The Bush Mfg. Co., Hartford, Conn., a

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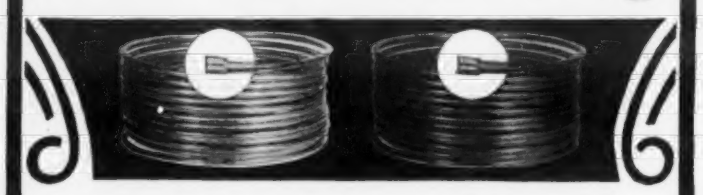

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# IN FIELD OF ELECTRIC REFRIGERATION

*(Concluded from Page 6, Column 5)*

Corporation of Connecticut. Filed April 13, 1931. Serial No. 529,672. 11 Claims. (Cl. 153—40.)

1. A tube bending machine including a base, a bender mounted on said base and including a pivotally mounted forming table, two former members, one of which is fixed with respect to said table and the other of which is movably mounted laterally of the axis of said fixed member to permit insertion of a tube between said members, means for securing said movable member in register with the fixed member, a former to be received in said tube, and means for pivotally moving said forming table to bend said tube around the tip of said former and around said former members.

### TRADEMARK

Serial No. 328,695. Michaels Bros., Brooklyn, N. Y. Filed July 11, 1932.

**KOLDAIRE**
**LIFETIME REFRIGERATION**

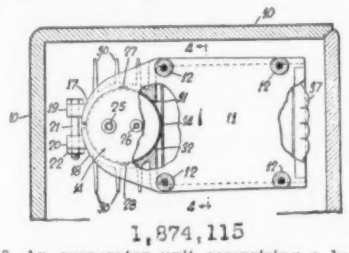
No claim is made to the exclusive use of the words "Koldaire" and "Refrigeration." For Refrigerators. Claims use since Feb. 25, 1932.

## ISSUED AUGUST 30, 1932

1,874,091. PROCESS OF AND APPARATUS FOR CABONATING LIQUIDS. Emery H. Fahrney, Chicago, Ill. Filed June 5, 1931. Serial No. 542,242. 6 Claims. (Cl. 62—91.5.)

1. An apparatus for the purpose of carbonating liquids with compressod carbon dioxide snow which consists of a container for the liquid, a receptacle immersed in the container and in which receptacle the carbon dioxide snow is disposed, and means forming tortuous passage through which the gas and liquid flow, the said means presenting maximum surfaces of liquid to the gas.

1,874,115. EVAPORATOR UNIT. Frank D. Peltier, Bridgeport, Conn., assignor, by mesne assignments, to Servel, Inc., New York, N. Y., a Corporation of Delaware. Filed Aug. 14, 1929. Serial No. 385,945. 3 Claims. (Cl. 62—95.)



1,874,115

3. An evaporator unit comprising a body having a compartment for ice trays and jaws for supporting said body upon an evaporator, said body being cut away between said jaws and compartment for permitting direct heat exchange between said compartment and the evaporator upon which the device is supported.

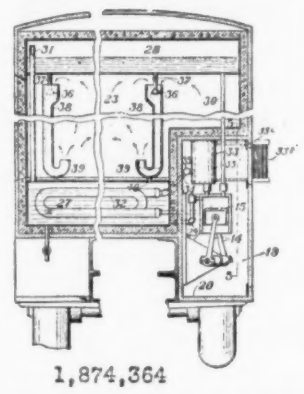
1,874,161. ICE REFRIGERATING DEVICE. Charles F. Belshaw, Dearborn, Mich. Filed Nov. 16, 1929. Serial No. 407,739. 9 Claims. (Cl. 62—69.)

1,874,204. MECHANICAL REFRIGERATION. Harold H. Nesbitt, Belair, Md., assignor to Hartford Engineering and Machine Co., Aberdeen, Md., a Corporation of Maryland. Filed June 12, 1930. Serial No. 460,748. 10 Claims. (Cl. 62—115.)

1. In refrigeration apparatus operating through a Carnot refrigeration cycle, an evaporator, and means responsive to depletion of refrigerant in said evaporator for periodically introducing into said evaporator a quantity of liquefied refrigerant at one time, sufficient to melt frost from said evaporator.

9. In refrigeration apparatus operating through a Carnot refrigeration cycle, and an evaporator including a header, a float in said header including valve actuating mechanism for determining the level of the surface of the body of liquefied refrigerant in said header, and for determining the replenishment periods thereof, a suction pipe, and an oil return tube pivotally mounted and communicating with said suction pipe having its outer end carried by said float and at the level of the surface of the body of liquefied refrigerant in said header.

1,874,364. REFRIGERATING APPARATUS. William H. Sartain, Columbus, Ohio. Filed April 23, 1930. Serial No. 446,684. 8 Claims. (Cl. 62—117.)



1,874,364

1. A vehicle body formed to include a refrigerated compartment, a refrigerant-containing tank located in the lower part of said compartment, a refrigerant storage tank located in the upper part of the compartment, means for forcing the refrigerant from the lower tank into the upper tank conduits arranged within said compartment between said tanks, means for spraying the refrigerant from the upper tank into the upper portions of said conduits for intimate contact with warm air taken from the upper portion of said compartment, and traps formed with the lower portion of said conduits for returning the liquid refrigerant to the lower of said tanks and permitting of the passage of the cold air into the lower portions of said compartment.

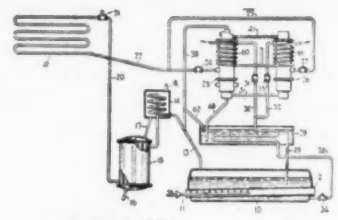
1,874,551. REFRIGERATED DISPLAY CABINET. Albert L. Lambert, Philadelphia, Pa., assignor to Heintz Mfg. Co., a Corporation of Pennsylvania. Filed May 13, 1931. Serial No. 536,989. 14 Claims. (Cl. 62—89.5.)

1. In a refrigerated display cabinet, an evaporator comprising a plurality of vertical sections having cross arms communicating therewith, shelf supports secured to said cross arms, and shelves supported thereon in heat exchange relation thereto.

1,874,621. REFRIGERATION. Bo Folke Randel, San Diego, Calif., assignor to Electrolux Servel Corp., New York, N. Y., a Corporation of Delaware. Filed Oct. 27, 1930. Serial No. 491,426. 11 Claims. (Cl. 62—119.5.)

6. In refrigerating apparatus of the class described, an absorber comprising a fall tube pump connected to receive weak absorption liquid from the generator and vapor from the evaporator.

1,874,654. CONTINUOUS ABSORPTION REFRIGERATING APPARATUS. Robert S. Taylor, Evansville, Ind., assignor to Electrolux Servel Corp., New York, N. Y., a Corporation of Delaware. Filed Nov. 19, 1930. Serial No. 496,599. 9 Claims. (Cl. 62—5.)



1,874,654

1. A refrigerating system of the absorption type including two absorbers, a refrigerant vapor line communicating with both absorbers, a weak liquor line communicating with both absorbers, a pressure equalizing line from the boiler, a strong liquor return line to the boiler, and means for simultaneously closing the pressure equalizing line and strong liquor return line to one absorber, and opening the pressure equalizing line and strong liquor return line to the other absorber.

1,874,718. FREEZING MECHANISM. Frank Tyson, Canton, Ohio. Filed March 7, 1929. Serial No. 345,148. 6 Claims. (Cl. 62—114.)

1. In apparatus of the class described, the combination of a cylinder having an inlet, a head for one end of said cylinder, an annular member mounted on the other end of said cylinder and formed with a flow passage having inlet and outlet openings leading through the wall of said member into said cylinder, a removable member for closing the outer end of said annular member, a valved discharge port provided in one of said members, and agitating mechanism within the space enclosed by said cylinder, head and members.

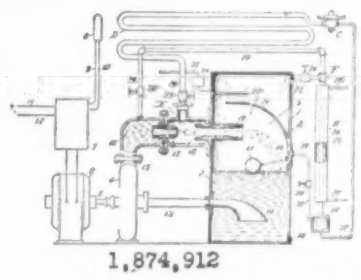
1,874,843. AIR COOLING ATTACHMENT FOR ELECTRIC FANS. Charles Adler, Jr., Baltimore, Md., assignor to The Adler Safety Control Co., Baltimore, Md., a Corporation of Maryland. Filed July 13, 1931. Serial No. 550,474. 3 Claims. (Cl. 62—129.)

2. In an air cooling attachment for fans the combination with a fan structure, of an annular band carried by said fan structure in front of the fan-blades, a series of radial plates extending inwardly from the inner surface of the annular band and a central cooling receptacle sustained by the inner ends of the radial plates.

1,874,911. FREEZING TEMPERATURE INDICATOR. David N. Crosthwait, Jr., Marshalltown, Iowa, assignor to C. A. Dunham Co., Marshalltown, Iowa, a Corporation of Iowa. Filed Aug. 25, 1928. Serial No. 302,031. 5 Claims. (Cl. 175—183.)

2. A device for indicating the freezing temperature of a liquid, comprising a galvanometer including a movable needle and a fixed dial calibrated in freezing temperatures, a receptacle for holding a sample of the liquid, a pair of spaced electrodes mounted within the receptacle and insulated therefrom, an electric circuit including the galvanometer and the electrodes, a switch for closing the circuit when a reading of the indicator is desired, movable scrapers mounted within the receptacle for cleaning the electrodes, and means connected with the switch and scrapers so that the scrapers will be withdrawn from the electrodes before the switch is closed.

1,874,912. REFRIGERATING METHOD AND APARATUS. David N. Crosthwait, Jr., Marshalltown, Iowa, assignor to C. A. Dunham Co., Marshalltown, Iowa, a Corporation of Iowa. Filed Aug. 22, 1930. Serial No. 477,073. 12 Claims. (Cl. 62—115.)



1,874,912

1. The method of refrigeration consisting in circulating refrigerant from a closed compression and storage space through a refrigerating space wherein it is vaporized, mechanically imparting motion to a portion of the liquid refrigerant and utilizing the energy of this moving liquid to lower the pressure in the refrigerating space, a stream of liquid refrigerant from the compression space also being forced together with compressed vaporized refrigerant into a condensing space and thence into the refrigerating space.

1,874,964. COOLING SYSTEM. Frederic T. Goes, Milwaukee, Wis., assignor to The Vilter Mfg. Co., Milwaukee, Wis., a Corporation of Wisconsin. Filed Dec. 31, 1931. Serial No. 584,108. 5 Claims. (Cl. 257—8.)

1. In combination, an air duct communicating with a chamber, a spray for delivering liquid into said duct to condition gas passing therethrough to the chamber, an ice reservoir, a water reservoir, means for conducting liquid from either reservoir to the spray for discharge into the air duct, and means for selectively returning the sprayed liquid to either reservoir.

1,875,129. REFRIGERATING DEVICE. Aurin E. Payson and Miner P. Wetmore, Norwich, Conn. Original application filed March 12, 1928, Serial No. 260,870. Divided and this application filed Feb. 26, 1929. Serial No. 342,710. 3 Claims. (Cl. 62—91.5.)

1. A refrigerating unit consisting of a stopper adapted to fit into a receptacle and having an axial opening in which a heat-insulated bottle is mounted, said bottle being adapted to contain a refrigerant in the form of solidified gas, and a removable pervious cup closing the mouth of said bottle to permit the gradual escape of gas.

1,875,164. MANUFACTURE OF CARBON DIOXIDE ICE. Peter Schlumbohm, Berlin, Germany, assignor to The American Thermos Bottle Co., Norwich, Conn., a Corporation of Ohio. Filed June 12, 1931. Serial No. 543,896. 4 Claims. (Cl. 62—121.)

1. In the process of producing artificially colored carbon dioxide ice, the steps which consist in utilizing carbon dioxide under pressure to inject coloring matter into a mass of unsolidified carbon dioxide, and subsequently solidifying said mass of colored carbon dioxide.

1,875,211. REFRIGERATING APPARATUS AND METHOD OF REFRIGERATING. Eugene L. Barnes, Buffalo, N. Y. Filed Aug. 27, 1929. Serial No. 388,666. 11 Claims. (Cl. 62—95.)

11. In a refrigerating apparatus in combination, a food compartment having an open side, a jacket surrounding and spaced from the walls of the food compartment, there being no communication between the space between the walls of the food compartment and said jacket and either the interior of the food compartment or the atmosphere, refrigerating means located in said space including a cooling fluid, and means affording a maximum heat conductivity from a portion of one of the walls of said food compartment to the refrigerating means, so that said portion will normally be at a lower temperature than other portions of the walls.

1,875,254. REFRIGERATION APPARATUS. Marshall Munce, Richmond, Va. Filed Nov. 18, 1930. Serial No. 496,475. 12 Claims. (Cl. 62—115.)

1. Refrigerating apparatus including, in combination, two adjacent and independently operable refrigerating units each comprising a compressor, a condenser, a work circuit and conduits for conducting a refrigerant from the compressor to the condenser, from the condenser to the work circuit, and from the work circuit back to the compressor, and means for cutting out the compressor and condenser of either unit and connecting the work circuit thereof to the conduits of the second unit so that a single compressor and condenser supplies refrigerant to both work circuits.

1,875,264. METHOD OF COOLING MILK AND OTHER BEVERAGES. Warren M. Robertson, Revere, Mass. Filed April 5, 1930. Serial No. 441,882. 6 Claims. (Cl. 62—170.)

3. The method of cooling a body, which comprises placing the body in a bath of water in which there is an expander of a compressor, condenser, expander circuit below the body, and utilizing the expander to maintain the temperature of the water within a range which will cause a circulation of the liquid downwardly about the sides of the body directly to and along the expander and thence upwardly at points relatively remote from the body.

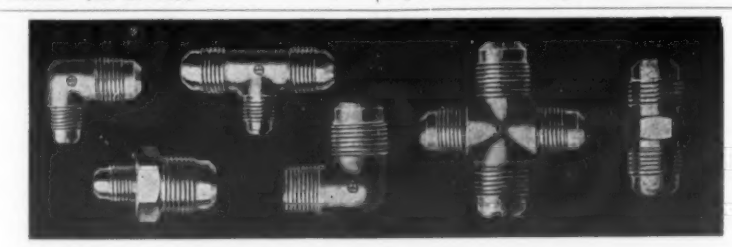
1,875,293. COOLING APPARATUS. Peter Schlumbohm, Berlin, Germany, assignor to The American Thermos Bottle Co., Norwich, Conn., a Corporation of Ohio. Filed Sept. 23, 1930, Serial No. 483,920, and in Germany Oct. 1, 1929. 8 Claims. (Cl. 62—91.5.)

1. A refrigerating apparatus consisting of an open condenser adapted to hold a primary cooling agent, a jacket forming an annular chamber around said condenser, an evaporator adapted to contain a liquid secondary refrigerant, and a conduit connecting said chamber with the evaporator and forming a hermetically sealed unit with said chamber and the evaporator, the walls of the evaporator being adapted to contact with the material to be cooled.

1,875,305. WATER COOLING SYSTEM. Earl Vernon Hill, Chicago, Ill. Filed Nov. 11, 1931. Serial No. 574,444. 11 Claims. (Cl. 257—122.)

1. In combination with an air cleaning and conditioning unit having water washing means therein, a plurality of tanks embedded in the ground, fins on said tanks, means connecting said tanks in series, and means connecting the last tank of the series with the spraying means, and a water supply for said tank series.

*(Continued in Next Issue)*

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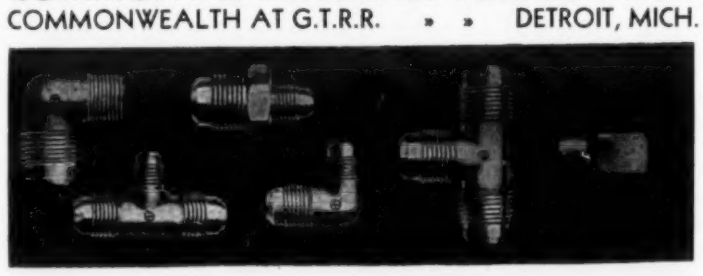



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